The Builder.

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Industrial History of Birmingham.

CONSIDERING the facilities of locomotion and the general spread of knowledge of all sorts in the present day, there are few towns whose industries are so little understood as those of Birmingham. The name given to it by Burke—"the toy-shop of Europe"—has been interpreted literally; it has been regarded as a depôt for steam-engines, lathes, steam hammers, and tools of all sorts; our belief as to the source of counterfeit coin is well expressed by calling it "Brummagem halfpence;" and whenever we wish to describe a style of ornamentation which is false, gaudy, and vulgar, "Brummagem" is the word which first rises to our lips. The expression "toy" has in Birmingham a special technical meaning; and a century ago the "toy trade" included buckles, purse-mounts, châtelaines, brooches, bracelets, and the endless varieties of steel watch-chains, sword-hilts, and other small wares in iron, or iron and steel. The erroneous impression that Birmingham is a place for steam-engines and such like, is due to the world-wide reputation of the Soho Works, which is, however, the only establishment of the kind of any note in the town. As a general rule, Birmingham steam-engines are not thought much of; the work turned in a Birmingham lathe is narrowly inspected, and an engineer is very properly sceptical as to the flatness of a surface produced by a Birmingham planing-machine. The remaining opinions which we have mentioned are, unfortunately for the town, based upon a much more solid foundation.

These remarks have been suggested by a work now before us.* To review in detail a book consisting of about ninety detached essays is obviously not a very desirable course to adopt. We shall, therefore, confine ourselves to a few general remarks on the trades of the town, referring our readers who wish to enter more into detail to the book itself, which is full of interesting matter, and is emphatically the work on the trades of Birmingham. As a rule, the reports are written by men who are not only practically acquainted with the subject, but are also engaged in the trade. This is an advantage, inasmuch as the writers are well fitted for the task so far as knowledge goes, but it is a disadvantage because it is apt to produce a tendency to exaggerate the relative importance of a particular branch of industry. Again, some of the reporters are not only the first in the trade, but, like Mr. Venus in "Our Mutual Friend," they *are* the trade. These gentlemen are in this difficulty: they must either lay themselves open to the charge of egotism, or deprive themselves of the credit to which they feel they are justly entitled. To quote the words of him of Verulam, "a man can scarce allege his own merits with modesty, much less extol them, . . but all these things are graceful in a friend's mouth which are blushing in a man's own."

* "The Resources, Products, and Industrial History of Birmingham and the Midland Hardware District: a Series of Reports collected by the Local Industries Committee of the British Association at Birmingham in 1865." Edited by Samuel Timmins. London: Hardwicke. 1866.

Nearly a third of the present volume is devoted to the trades of the district, the remainder containing a description of Birmingham manufactures. The notices relating to trades not specially limited to Birmingham and the vicinity are sufficiently interesting in themselves, but are of little value when compared with those which deal with the brass trade, the manufacture of guns, buttons, electro-plated and Britannia metal goods, and other industries for which Birmingham is known throughout the civilized world.

It has always appeared to us that the most interesting point in Birmingham manufactures is the immense amount of ingenuity which is expended on the production of trifling articles. Few have any notion of the hours of anxious brain work, and large outlay of money, which have been necessary to produce a pin, a steel pen, a screw, or a nail. The immense consumption of these articles has rendered it profitable to expend so much time and money on machinery for facilitating their production. The question has often been asked what becomes of all the pins; and it may well be repeated, seeing that one house in Birmingham consumes alone about 3 tons of brass wire, *weekly*, for the production of this useful little appliance. The steel-pen trade gives employment to 360 men and 2,050 girls and women, who turn out 98,000 gross weekly, for the production of which about 10 tons of steel are used. A gross of pens can now be sold for 1½d., a feat which is, perhaps unparalleled, seeing that each of the 144 pieces of steel has to go through at least twelve processes. On the other hand, some of the fine "crowquills" used for lithographic purposes, are sold for 6d. each. The machinery used for the production of the two million screws which Birmingham sends out every week is of a most costly description, and is highly ingenious. About 5,000 tons of wire are consumed annually in this manufacture, whilst more than three times that weight of iron is made into nails. This is exclusive of the metal used for the manufacture of wrought nails, which is not carried on in the town, but in the outlying districts. A good instance of the importance from a manufacturing point of view, of an insignificant and almost unnoticed article, is shown by the fact, that 500 tons of metal are annually drawn into wire for holding down the corks of soda-water and other bottles.

Amongst the severe things which have been said of Birmingham, we must not forget the accusation that it is "a town of lacquered shams." This is to a certain extent true; but, as we hope to show presently, Birmingham has not been backward in promoting the progress of genuine art. A large portion of the business of the town consists really in making inferior articles resemble those of a more costly description. As an example, we will take the "plated trade," as it is called, which was established in Birmingham by the celebrated Matthew Boulton, at Soho, in 1764. The articles were made so richly that the daily use of forty years has scarcely made them "bleed." "This," says Mr. Ryland, the writer of the report on this branch, "was, however, owing chiefly to ignorance, for it was not yet discovered how small a quantity of silver could be used in plating. Birmingham was not long in finding this out, and putting it into practice." This is admirable. If there is one thing in which Birmingham has succeeded it is in making a very small quantity of silver go a very long way. The skill of Birmingham platers has occasionally led them into trouble, as it did in the case we shall relate. At one time large quantities of a species of money known as "Manillas" were produced in Birmingham. It was cast of an alloy of copper, lead, and arsenic:—

"In an evil hour, however, a very sharp trader, not a little unscrupulous, animated by the desire to get speedily rich, conceived the brilliant idea of producing these objects in cast iron, and coppering them over by the electro-deposit process. On their arrival at their destination the deception was at once detected, the 'manilla' rejected, and they now lie bulked up by the side of the African river where they were disembarked, are 'taboo' to the Africans, and remain a standing monument, not to the honour and probity of the exporter by whom they were sent out. This gave the quietus to the manufacture of 'manilla' money in Birmingham until very recently."—p. 273.

Long before this, in 1797, there was a large issue of counterfeit "Boulton" penny-pieces, which were made of lead faced with copper. It is needless to multiply instances in which the town has been unpleasantly mentioned in connexion with issues of counterfeit coin and bank-note forgeries. We once heard of a Birmingham manufacturer supplying a large quantity of rifles for a foreign market, in which the rifling was represented by a few notches at the muzzle. We do not wish to convey the impression that this is the prevailing spirit of Birmingham manufacturers; but it is obvious that such an atmosphere is not the most favourable to the production of genuine work of any kind, artistic or otherwise.

There is another cause which has operated, and will continue to operate, powerfully on the general quality of Birmingham work, namely, the artistic inferiority of the methods employed. Stamped work will ever contrast unfavourably with beaten work, in consequence of the necessity of avoiding all under-cutting in the die. This defect is, of course, not so apparent in stamped works in low relief. So also with the multiplication of objects by casting, it is, as Mr. Aitken, who contributes nearly a third of the matter relating to the trades of the town, very truly says:—

"As all hand-work bears evidence of its origin, so also does machine-work. Molten metal flowing into a matrix by its own gravity can never rival the results produced by the skilful hammer-man. Cast iron as you may, carve or model patterns, mould them elaborately, produce relief by false coreing, the result will never be aught else but cast iron, fragile, snapping at a touch, each piece hateful to the artist's eye, from its stereotyped similarity to its fellows. Similarity produced by hand-labour is similarity with diversity, uniformity without monotony. . . . In cast iron we recognise only the machine-made copy of a copy; in wrought iron we feel the presence of the thought which the craftsman has stamped upon the work."—p. 544.

If we may be permitted the simile we should say,—

> "As for some dear familiar strain,
> Untired we ask and ask again."

So, also, in ornamentation, we do not tire of a beautiful *motif* when wrought by a cunning hand. But the wearisome repetition of the same air, however beautiful, on a street organ, like the lifeless reproduction of ornament by machinery, never rises above a dead level of mediocrity.

The essential inferiority of the process admitted, there is no reason why die-sinking should be the means of perpetuating the wretched designs for which Birmingham has an unenviable notoriety. As a rule, it costs little more to sink a die of a good design than of a bad one. When the question of the purchase of Shakspeare's house was being agitated, a Birmingham manufacturer introduced curtain bands and cornice ends in the shape of a swan, *i.e.*, that of Avon, from the beak of which dangled a portrait of Shakspeare in stamped brass. During the time that the rage for "La Polka" was at its height, the "Polka curtain band" made its appearance.

In spite, however, of the low art-feeling of the town, Birmingham men have been haunted by forms of beauty which, in some cases, they have succeeded in reproducing. The town is justly proud of its connexion with Baskerville, whose beautiful type has perhaps never been surpassed. He was not a native of Birmingham, but was born at Wolverley, a small village in Worcestershire; and, early in the last century, he started as a cutter of "gravestones in any of the hands." His window slate is still in existence, and shows, says the editor of the present work, "in a marvellous manner, the form and style of the 'letter' he afterwards delighted to produce. As a 'writing-master'

and a gravestone cutter, he passed his early days, became a japanner, and made a fortune by his trade." His success, artistically speaking, as a designer of types, is abundantly shown by his printed works. At his death the whole of the punches, matrixes, and types were, it is generally stated, sold to Beaumarchais, who used them to print an edition of Voltaire's works.

It is worthy of remark that matrixes from the original punches, cut in 1724 by the celebrated William Caslon, which are in our judgment inferior in beauty to Baskerville's letter, are now in daily use at the Caslon Letter Foundry. They were laid aside in 1772 as being out of fashion, and remained so until about 1830, when a few types were cast for Mr. Whittingham. It would, no doubt, be incorrect to attribute this result entirely to a growing taste for the beautiful. A part of it is unquestionably due to the restless desire for change.

Many will doubtless be inclined to smile at the mention of Birmingham in connexion with the revival of the study of Gothic architecture, but the two are not quite so unconnected as at first sight appears. About the year 1820 the late Mr. Thomas Rickman, author of the well-known "Attempt to discriminate the Styles of Architecture," settled in Birmingham as an architect, which profession he followed there for about twenty years. Judged by the present standards, his churches do not rank very high; but it must be admitted that his book, published in 1817, has had great influence on the Gothic revival. Mr. Rickman was, we believe, originally a commercial traveller, in which capacity he made many of the observations which he afterwards embodied in his work. His name will always be entitled to respect, as being amongst the earliest students of a subject which has so largely influenced the architecture of the present day. It is true that in one of Rickman's Gothic churches in Birmingham, namely, St. George's, the window tracery is of cast iron, as is the case also at Holy Trinity Chapel, of which Mr. Francis Goodwin was the architect; but it must be remembered that these churches were built more than forty years ago, when there were comparatively few masons who could work Gothic tracery. On the other hand, skilful pattern-makers and moulders were to be found within a stone's throw, and the architects yielded to the temptation.

There is another passage in the art-history of Birmingham which is of especial interest just now in connexion with the recent discussions as to the origin of the mysterious pictures which were produced at Soho at the end of the last century. About the year 1784 Francis Eginton began to paint glass at Soho (which was famous for other things besides heavy machinery), where he is said "to have brought his art to astonishing perfection." Specimens of his work are to be found in St. George's Chapel, Windsor, Salisbury and Lichfield Cathedrals, Magdalen College Chapel, Merton College Chapel, and Wanstead Church, Essex. In 1794 Beckford gave him a commission for windows amounting in value to 12,000*l.* for Fonthill. It is impossible to say much in favour of the artistic value of Eginton's works; but, as Mr. Powell, the reporter on the manufacture of stained glass, remarks,—

> "We are constrained to feel grateful to the man who was the pioneer in our town to break out of the dreary blank of white light in which we were lost,—who did something while others did nothing,—who made earnest efforts, believing in his craft,—and who really produced large and imposing works under tremendous difficulties."—p. 52.

The most important work of Eginton's in the town is the east window of St. Paul's Church, "which was made by that celebrated artist, Francis Eginton, in 1791, at a cost of 400 guineas," says Hutton, the historian of Birmingham. It is thus described by Mr. Powell:—

> "It presents to the spectator a sea of bistre, with a few finger-points of light and streaks of colour. It is not till the eye has become accustomed to the sombre tone that masses of huge brown limbs are discoverable; then a horse's head, then a herculean St. Paul daringly displayed across the centre light. Above, the figure of our Blessed Lord is seen falling through a bright rent in some very black clouds. On the dexter side is a group which may be intended to represent the Christian Church suffering under Saul's persecution,—brown flesh in quantities, with a few pieces of rich colour. . . . Nevertheless, there is a far superior tone about this window to that of most glass of the same period. It is a bold and great effort. Eginton could have been no mean or timid artist, and must have been well conversant with the works of the Italian painters of the seventeenth century."—p. 522.

The next step in glass painting was the establishment of Mr. Hardman's factory for the reproduction of Pugin's designs, to which we shall have occasion to refer presently.

This brings us naturally to consider a most important question, viz., the influence of art-education on Birmingham manufactures. There is probably no other town in the kingdom, or even in the world, where a correct appreciation of form and design is more necessary, and we shall not be too severe if we say that in no other place has it been less attended to. It is true that Flaxman, Chantrey, and Wyon made designs for Soho under Matthew Boulton, who, it was said, "would buy any man's brains," that the two first-named modelled for the Messengers, and that the name of Pugin is something more than a tradition at Messrs. Hardman's. But a good design is not everything. The less skilled the hands through which the article passes during its reproduction, the more does the artist's design suffer. One looks naturally to the School of Design for the artistic education of the workman, but Mr. Aitken tells us, and he is well qualified to judge, having been connected with Birmingham trades for the last quarter of a century, that—

> "Anything like a real and abiding interest in the progress of the school does not appear to be felt, even by its committee, who, selected ostensibly to direct the studies of the artisan pupils or students to practical results, virtually fail to do so, and thereby ignore the intention of the school as a means of improving the manufactures of the town. The total number of students in the Birmingham school is at present 873, of whom 190 are females, 200 pupils of King Edward's school, and 483 are students of the artisan class, or those for the benefit of whom the school was originally instituted. Of the latter number, 30 were connected with the brass foundry trade, as modellers, chasers, and workmen."—p. 373.

The following return of the occupations of the students of the Birmingham School of Design is taken from the "Report of the Parliamentary Committee on Schools of Art," published in 1864. It refers to the year 1863, since which no detailed return has, to our knowledge, been published:—School boys and girls, 368; no occupation, 103; engravers and etchers, 71; mechanical engineers, 60; clerks and cashiers, &c., 57; die-sinkers, die and stamp cutters, 39; jewellers, 33; teachers, 28; builders and apprentices, 26; chasers and embossers, 21; draughtsmen, 19; glass-painters, 13; tool-makers, 12; brass-founders and coppersmiths, 10; modellers and moulders, 9; stone-masons and stone-cutters, 8; electro-plate workers, 7; japanners, 7; gold and silver smiths and refiners, 5; letter-cutters, 5; miscellaneous manufacturers, including mill-owners, 4; glass cutters and engravers, 4; students, 4; chandelier makers, 3: the total of which is 916.

What a beggarly account is this! The jewelry trades of the town give employment to about 6,500 hands, including jewellers proper, silversmiths, gold and silver chain makers, and gilt toy makers, who in the course of a year use up from 700,000*l.* to 850,000*l.* worth of the precious metals. The influence exercised by the School on the manufacture is represented by the training of just *thirty-three* workpeople, besides that due to the die-sinkers and chasers, some of whom are of course engaged, directly or indirectly, in the production of jewelry. Most of the writers in the work before us appear to be conscious that the school ought to exercise far greater influence than it does; and we find the author of the report on the saddlery trade saying that many of the saddlers engaged in the production of embroidered and other ornamental work "have had regular art-instruction in our School of Design." There were none there in 1863, at all events.

But a knowledge of drawing is not sufficient for the art-workman. It is necessary that he should see and become familiar with the works of great artists. It is true that their influence is often unfelt at the time, but if the eye has been trained to see, their silent teaching will most assuredly bear fruit when the student returns to his work-bench. It is, of course, too much to expect that a town like Birmingham should be able to form such a collection as that at South Kensington; but, still, something might be done towards the establishment of a permanent art museum, say at the Midland Institute, the present *locale* of the School of Design, which should not be without influence on the manufactures of the town. It might, at all, events, teach the true principles of using each material, and show the absurdity of attempting to imitate in cast iron the effects which can only be obtained with wrought, of which the hideous cast-iron gates and gallery-fronts at the Music Hall (now the Prince of Wales's Theatre) furnish a good example.

But not content with mistakes of this kind, a Birmingham artist was bold enough to erect an elaborate Mediæval altar tomb, all in cast iron, in Edgbaston Churchyard, some years ago. There is also in Yardley Churchyard, situated a few miles from the town, a cast-iron memorial, intended to represent a classical sarcophagus, but which succeeds in being very much like a large coal vase. We have already mentioned the cast-iron tracery of the windows at Trinity Chapel and St. George's Church, Birmingham, and we narrowly escaped the introduction of cast-stone tracery. In 1851 a patent was taken out for casting slabs for steps, window-heads and cills, columns and capitals, &c., in basalt, which was shown by Sir James Hall, in 1798, to fuse at a comparatively low temperature. The process was tried at Messrs. Chance's glass-works, but it did not pay. Some specimens of the work are to be seen in the Edgbaston Vestry-hall, a building in the Anglo-Norman style, the whole of the columns, window-pieces, doorways, and ornamental steps of which are cast in this material.

The artistic history of Birmingham has, however, one great redeeming point—the revival of the true principles of metal working at Messrs. Hardman's, under the auspices of Pugin. It was in 1837 or 1838, that Pugin was introduced to Mr. John Hardman, who was well acquainted with all the processes of metal working, and was, moreover, an enthusiast. A close friendship sprang up between the two men, and it was only terminated by Pugin's death, about fifteen years afterwards. Mr. Hardman undertook to start a manufactory for the reproduction of Pugin's designs for metal-work and stained glass.

> "Such was the beginning of the revival which has now developed an important branch of industry, and exercised an influence on metal working generally, closely akin to that of the Pre-Raffaellite movement in painting. It has had the effect of making metal-workers *think*, apparently, for the first time for some centuries, and has been the means of creating a superior class of skilled artificers, who claim for themselves a special department of metallic industry. Wherever metal-working on Mediæval principles is now practised, its origin can be traced to Birmingham as the parent stem, and a large proportion of the artisans first employed in it by other firms and manufacturers have acquired their skill and learned the secrets of their art at the works of John Hardman. It is honourable alike to the adaptive capabilities of Birmingham artisans and the spirit of Birmingham manufacturers, that this town, so often stigmatised as the centre of the production of 'lacquered shams,' should have been selected by Pugin as the field for carrying out his conceptions, and that under the guidance of his genius it should so nobly have taken the lead in the production of realities."—p. 538.

The progress of a revival of the kind may be compared to an agitation produced in the centre of a tranquil lake. The wave spreads until it reaches the banks, when it is reflected and returns to its point of origin. Here, however, the simile ends, for whilst the indulations gradually become fainter and fainter until they are altogether imperceptible, the returning wave of a revival like that under consideration gathers strength as it goes, and returns to its starting point in the shape of a demand for what is good and true. The waters must come and go and the waves beat many years yet before the barriers of conventionalism and bad taste, behind which Birmingham has entrenched itself, are beaten down. We shall not be doing the town an injustice if we say that the progress which she has undoubtedly made during the last few years is mainly due to pressure from without. Manufacturers have been content to follow the improving taste of the day, instead of aspiring to lead it.

It is impossible within the limits of this article to do justice to the subject of the "Trades of Birmingham." They are so varied in their nature, and present so many different aspects, that the topic is almost inexhaustible. We are compelled to omit all mention of the social condition of the workpeople and the sanitary state of the town, which appears to be not quite so satisfactory as popularly supposed. It would also be interesting to trace the effects of legislation, foreign treaties, and political events on the various branches of industry. The markets which Birmingham supplies are so numerous that a temporary cessation of orders from one locality is not so disastrous as it is to other towns. Again, the character of the wares is so varied, and so little is the town dependent upon any one branch of industry, that even war does not create a panic. On the contrary, the Birmingham manufacturers rise to the occasion, and are ready to supply either or both sides with the means of destroying each other according to the very latest fashion.

MANCHESTER CONGRESS OF THE SOCIAL SCIENCE ASSOCIATION.

The proceedings of the Congress since our last have been eminently satisfactory, and can scarcely fail to produce good results in various quarters. The president (Lord Shaftesbury) has been alike indefatigable and successful. Lord Brougham, too, though feeble in body, has shown much of his former vigour of mind; and the addresses of the four heads of Departments are all noticeable productions. The discussions were carried on with great animation, and contributed much to the right understanding of many questions. Of the Manchester Committee, which has worked well, we must especially mention the Rev. S. A. Steinthal and Mr. Duffield; while Mr. Hastings and the Rev. Walter L. Clay, as officers of the Association, have spared no indeavours to bring about a satisfactory result.

The Workmen's Meeting, always a special feature of the week, was a remarkable gathering. The Free Trade Hall, in which it was held, was crowded beyond its limits, nearly 6,000 persons being present—eager, earnest men; and some excellent speeches were made by Lord Brougham, Mr. Thos. Hughes, M.P., Mr. Daniel, Q.C., Mr. R. Rawlinson, C.B., and others, Lord Shaftesbury ultimately winding up. A working engineer, Mr. Iden, and a porter in one of the warehouses, Mr. Thos. Evans, spoke effectively in moving and seconding a vote of thanks to the speakers.

Many of the papers read, such as Mr. A. Trollope's, on International Copyright; Mr. Dudley Field's, on International Law; Dr. Lankester's, on Infanticide; the Right Hon. H. A. Bruce's address, on Education; and others, have rightly obtained full publicity. We must restrict ourselves, as usual, to some of the subjects discussed in the departments of Health and Social Economy. Touching

The Health of Nations,

We print a portion of Dr. Farr's address as President of the Health Section:—Health implies more than existence; it implies energy in strength and in intellect. As political economy rests upon the idea of value, so our science rests upon the idea of health, and it is as important to us to find a measure of health as it is to the economist to find a measure of value. That measure must be simple, and applicable to all countries. Now, the measure that is in universal use is the rate of mortality; a unit of life loses a certain fractional part by death every moment, and the amount of loss in a unit of time expresses the rate of mortality. The unit of time is always a year, and the rate of mortality is found by dividing the deaths by the mean numbers living multiplied into the time. The rate varies from ·020 to ·040 in England; that is, in one place the deaths are 20, in another 40, to 1,000 living. Indeed, the range is still greater without a correction to which I will shortly advert. In a normal community, constituted of persons of all ages by an equal number of annual births, there is a fixed mathematical relation between the rate of mortality and the duration of life. Thus, if the average rate of mortality in two cities is 2 per cent. and 4 per cent., then the mean duration of the lives of the inhabitants is 50 years in the one city, and 25 years in the other. Therefore, in saying that rate of mortality measures, it is conversely affirmed that length of days measures the health of nations. As the population fluctuates, certain corrections are necessary; the rates of mortality are determined at various ages, and from these the probabilities of living year by year are calculated and set forth in a life-table that determines the path every generation passes over from rising to setting. The mortality is really a life-measure, for the people living to a given sum of births increases in exact proportion as the duration of life increases. Public health now engages the attention of every civilised State; so we can pass in review the principal populations of Europe, and from the researches of their own statists learn by this measure their comparative health. I take the population in the lowest stage of health first, beginning with Russia. That empire is emerging from barbarism; and its condition enables us to conceive the state of the population of Europe in the dark ages. The people of various races between the Caucasus and the Arctic Ocean, the Oder and the Ural Mountains, die at all ages, from birth up to 140 years, it is said, but their mean lifetime is only 25 years. The marriage rate is 10, the birth rate 45, the death rate 36 (per 1,000 is always understood, unless another scale is mentioned). Thus, birth, marriage, death succeed each other rapidly among the sixty millions of people diffused over nearly two million square miles of steppes, forests, farms, and river-side pastures. In Archangel, where the greatest extremes of cold are experienced, the mortality is nearly the same as in England; in Esthonia and Courland, on the Baltic, the rate is low; so it is in Finland; while about the Caucasus, the Black Sea, and the Caspian, it ranges from 40 to 52. Whenever the mortality is excessively high in any place, its causes can now almost always be discovered; they are familiar enough to us in England, but they take different forms in different countries, and are the subject of inquiry in Russia itself. Italy, extending from the Alps across the middle of the Mediterranean, offers a strong contrast to Russia; it is divided by the Appenines, breathes the air of the sea, is not frozen by hard winters, is the home of the arts, and inherits the renown of the empire of the world. But the Italian people suffer much; few live to their natural term; the death-rate is 30. I speak now of the new kingdom of Italy. The death-rate in Piedmont and Lombardy, and in the islands of Sicily and Sardinia, is 29; south of the Po, in Parma, 35; Modena, 31; Romagna and the Marches, 31; Tuscany, 33; Naples, 35. Umbria is the healthiest province of Italy, rate 27; and Rome, thanks to her aqueducts, is perhaps the healthiest city in Italy. Venetia, under the Austrians, was in health on a par with Tuscany, 33. It is a peculiarity of Italy that the population of the country is as unhealthy as that of the towns. This low standard of health is the fruit of the former state of things, as the new Government has had little time to do more than bring evils to light which luxuriated under small paralysing despotisms. As the science of Italy reveals the evils and their causes, the people will find remedies; and among the first will probably be the restoration of the great drainage works, and the magnificent aqueducts of their ancestors. Improved health will increase the military power of Italy. East of Italy is Greece—which holds only a fraction of the Greeks, about whom little can be said—Turkey, Syria, Egypt, North Africa. All known about these fine regions of the world is that they are desolated by diseases, are unhealthier than Russia or Italy, and are nurseries of the plague that subjects Europe to the vexatious oppression of quarantine. Spain, lying west of Italy, between the Mediterranean and the Atlantic, mountainous, and divided by deep-cut rivers, was, perhaps, when she colonised South America, the healthiest country of Europe. The death-rate of Spain is now 28. Between Italy and Russia, on the Danube, extending from the Carpathians to the Adriatic, lies the Austrian empire, full of natural resources, and pervaded to a considerable extent by the industry and science of Germany; yet the death-toll of Austria is high, it is 30. The mortality of Prussia is not quite so high, it is 29; in Bavaria, on the Upper Danube, it is 29; in Saxony, on the Elbe, 29. At such rates 72,000,000 of Germans and their associated races die. In none of these countries do the people live on an average 30 years. We now enter a healthier region of Europe, of which England is the centre; where the people live on an average 35, 40, or 50 years, and where a fuller life is enjoyed. Take Norway, for example, with its Udal proprietors along fiords and streams; there the mean lifetime of the people is full 50 years. The death-rate is 17, the birth-rate is 34. They are, as the old sagas teach us, at home on the ocean, and emigrate freely. In Sweden, as well as Denmark, the mortality rises to 22; and the mean lifetime of the Scandinavians is about 44 years. Sweden, I may remark, is famous in our science for furnishing Dr. Price with the data from which the first national life-table was constructed. In Hanover the death-rate is 23; and in Holland, on its canals and river deltas, where the greatest natural sanitary difficulties are found, the mortality is 26; the mean lifetime is 35. In Belgium other difficulties have sprung up; the population is the densest in Europe, thanks to its industry, but the death-rate little exceeds 22. If we ascend the Rhine to Switzerland, we there find several healthier cantons. In France, that various and beautiful land, lying between England and Italy, Germany and Spain, the death-rate was 23; in the last year or two it has fallen to 22, as low as that of England. No variation in the health of the States of Europe is the result of chance; it is the direct result of the physical and political conditions in which nations live. This is so well understood that the people of every country are associated with you in these inquiries, and are watching the progress of the great question of public health in England. In Germany, including districts under paternal well-intentioned sovereigns, some 300,000 men, women, and children are killed every year by diseases, in excess of the numbers dying of the same diseases in France. Under the indolent princes of Italy the annual life-loss in excess exceeded 150,000 lives annually. Not to save in some circumstances is to destroy. I now ask you to consider the sanitary state of the United Kingdom. The rate of mortality is 22. The rate is nearly the same in Scotland, England, and Wales. But how fares it with Ireland? Well, as far as official documents go, the death-rate of Ireland is 17; and, after every allowance for defects in registration, which has only been recently established, I do not think the death-rate of Ireland can be set higher than that of Scotland. From the English life-table we learn that the mean lifetime of the nation is 41 years (40·85), and this implies a corrected mortality of 24 (exactly of 24·47) annually, whereas by the ordinary method the mortality is 22 (or 22·45). The difference arises from the increase, which throws into the population a mass of young persons at ages when the mortality is below the average. The average age of the dying is reduced from the same cause: it is 29·4 years. Similar corrections of the mortality are required, and will ultimately be made in other countries. The mean age of the population by the life-table is 32 years; the mean age of the enumerated population in 1861 was 26½; the difference of 5·5 years arises from the same cause. If a normally constituted population has lived 32 years, it will live 32 years under the same law of mortality; but in England the age of the people is now 26·5 years; and they will live 35·6 years on an average. As they are younger, they have an ampler prospect of life before them than a stationary population. You are aware that more boys are born alive than girls, and the boys dying in greater numbers, this provision of nature brings the sexes nearly to an equality of numbers at the age of marriage. Thus of 1,000 children born in England, 512 are boys, 488 girls; 334 men, 329 women live to the age of 20; the excess of boys is reduced from 24 to 4; and, if there were no emigration and foreign service, the men of the age 20–40 would exceed the women in number. An unchanging million of annual births will produce, according to the law of vitality in England, a population of 41,389,940, consisting of 20,426,138 males, 20,432,046 females, large numbers differing quite inconsiderably. The births registered in the United Kingdom in 1865, exclusive of the islands in the British seas, amounted to 1,006,223, and this is below the actual number, as all the births are not registered in Ireland or England. The population of the United Kingdom, including the islands, is now estimated at 14,775,810 males, and 15,553,397 females. England differs from the other countries of Europe in this respect,—it has 250,356 men in the army, navy, and merchant service abroad, on the seas, and in English possessions. This leaves 14,525,454 males at home, against 15,553,397 females. The females exceed the males in the United Kingdom by 1,027,943. After deducting the men abroad having English homes, the number is reduced to 777,587 women. The proportionate number is greatest in Scotland, least in Ireland. Nevertheless, if our calculation is correct, the men must be somewhere in existence; and, in fact, in America and in Australasia alone, at the last census, the males found exceeded the females by nearly a million (972,530). Allowing for the share of other nations in the surplus, there can be no difficulty in identifying the men of which the 777,587 women at home complete the calculated couples. The men are in Newfoundland, New Brunswick, Canada, Australasia, and the United States, whither the women have hitherto hesitated to sail from home across the ocean; but, with constant magnetic communication, commercial intercourse, and the intimate union of the people on both sides of the seas, the equilibrium of the sexes cannot fail, in the end, to be re-established. It is gratifying to find that the health of the English race on the other side of the seas, so far as we can judge from imperfect documents, is not worse than it is in England; and that those rising communities are eager to adopt all the sanitary improvements of Europe. In some respects they have gone ahead of Europe. I may refer to the magnificent aqueduct pouring the fresh streams of a

mountain river into New York since the year 1842, when Paris and London were drinking polluted waters from the Seine and the Thames.

At the first meeting of the Health Section, Mr. W. Rendle read a very able and comprehensive report from the standing committee. The deficient water supply was commented upon, and it was insisted that private profit should not be made out of the supply of water, which should be distributed at prime cost by public bodies. The most practical suggestion made was, that a royal commission should be appointed, with a view to the simplification and consolidation of our sanitary laws, and securing their administration by good and willing men.

Mr. P. Holland moved a resolution calling the attention of the Council to the report, and particularly to the suggestion, that a royal commission should be appointed to facilitate the consolidation and the better administration of sanitary laws.

Mr. Godwin seconded the motion, and expressed the hope that the report would not be listened to only and forgotten, but that it would receive practical attention in Manchester.

The motion was agreed to.

The Smoke Question.

The special question was, "How far smoke and the products of combustion, arising from various manufacturing processes, were injurious to health? What measures ought to be taken to prevent the contamination of the atmosphere from such causes?"

Dr. Angus Smith initiated the discussion by reading a very valuable paper, to which we may be able to return. In opening the paper Dr. Smith remarked that the disinfecting power of smoke had not rid us of disease, nor did it prevent occasional pestilences. If it did good, it did more evil, and much of the mortality of Manchester must be attributed to smoke. It had been said that if the carbon was thoroughly burned the amount of sulphurous acid would be so great as to be intolerable; but when the blackness was removed the sulphurous acid seemed to escape more easily. The only sure mode he knew of diminishing the amount of sulphurous acid given out by chimneys is by burning no sulphur. This can be done, perhaps, to some extent, by burning less coal, and burning more economically; next, by not allowing the most sulphurous of the coals to be burnt in large towns. This latter is a simple mode of doing some good, and cannot in all cases be considered too great a demand on manufacturers.

Mr. P. Spence read a paper in defence of smoke.

Mr. Holland said that smoke was prevented in London by the imposition of penalties, which were doubled in amount for successive offences; what was accomplished by one man being made the standard for his neighbour. He could hardly bring himself to believe that Mr. Spence's paper had been prepared in earnest; it must have been read to provoke debate. There was no engineering difficulty about burning smoke; but it would be far better not to make the smoke than to do so much to get rid of it. Mr. Fairbairn had made one furnace consume the smoke of another, thus showing that smoke could be prevented by a good stoker. The comparison of different towns Mr. Spence had made was fallacious, because circumstances which affected their health had been lost sight of. Steam-engine smoke had been prevented, and therefore could be. It was stupid not to prevent it; and manufacturers had no right to expose the public to injury.

Mr. W. Fairbairn said, that thirty years ago he had no hesitation in declaring that it was practicable to prevent smoke, and since that time his conviction had been confirmed by the practice of several large establishments. If a certain quantity of air were admitted into our furnaces, we might have a nearly transparent atmosphere; and this would be accompanied by a great saving of fuel. An additional boiler would often enable a manufacturer to prevent smoke without difficulty; and in Cornwall, where smoke was not made, and had not been for fifty years, there were 50 per cent. more boilers in proportion to the engines than there were in Lancashire.

Alderman Cawley, C.E., said it was supposed that railway locomotives had been cured from smoking by legislation; but travellers knew better, and the defect in the legislation was that the penalty was not upon the production of smoke, but upon the construction of the engines.

Dr. Macadam, concurring generally with Dr. A. Smith, dwelt on the difference between dense smoke, containing a large quantity of carbonaceous matter which the air had not power to carry away, and the diffusion of gases which came into play when the carbon was more perfectly consumed; and, referring to the question of fire-grates *versus* stoves, mentioned the uses of chimneys in ventilating rooms.

Mr. Galloway recalled the *Builder's* suggestion of lighting a fire at the top, in order to prevent smoke, as one of several plans discussed in a paper, which he wished an opportunity to read.

Mr. Godwin wanted to know nothing about the best means for the prevention of smoke; it was an established fact that smoke could be economically consumed. The thing was settled and done with, and therefore it was a public misfortune that such a paper as that of Mr. Spence should have been allowed to be read in the section. (No, no.) The time had come for the outer world,—that outside the manufacturing circle,—to insist upon preventing smoke by Act of Parliament. In Manchester, besides health, buildings were destroyed; instead of beauty there was everywhere a dulness most depressing to the spirits. Happiness was no small thing; the happiness of the inhabitants of a town all their lives was no trivial matter; and he had little doubt that an immense amount of misery was caused by smoke in Manchester and other towns. The material results of its prevalence were quite lamentable to the eye of a stranger. Magnificent warehouses, in respect of which Manchester stood almost alone, were destroyed in appearance in three or four years. The noble Assize Courts were suffering already, and it was lamentable to compare a statue put up weeks ago with one that had been up as many months. There was an Act which said that smoke was illegal here; but it was not put in force, because those who ought to see it carried out imagined that they would suffer from its operation. What was required was an authority which would enforce the law.

Mr. Spence rose to reply to what he deemed almost personal attacks upon himself, twitting Mr. Godwin as being the representative of London, which we were to suppose was almost free from smoke, and remarking that the temper displayed by the disputants suggested a contrast between the happy state of mind enjoyed in Manchester and the irritability Mr. Godwin had brought from the metropolis. That gentleman, however, denied that he had given London so good a character, and affirmed that it was not half freed from smoke. Mr. Spence then admitted that he was convinced smoke could be consumed; but, he asked, *Cui bono?* Should we be in a worse or a better position? He maintained the relevance of the comparisons he had made between different towns, asserting that their conditions were similar, which several gentlemen denied.

Mr. Rumney emphatically denied the statement that the Act had been a dead letter in Manchester, and defended Mr. Spence, entering into the chemical argument, and dwelling upon the practical difficulties experienced in preventing smoke.

Dr. F. Crace Calvert, who had read a paper on the subject, delivered a spirited reply, vigorously contending that, as several classes of works were carried on without the production of smoke, such as puddling furnaces and mills, the question of possibility was settled, and confidently denying the assumption of Mr. Spence that it was pure carbon which floated in the atmosphere. It contained a large quantity of hydro-carbon and the products of the distillation of coal tar; and it was these carbonaceous matters which were so deleterious.

Dr. Farr wound up a good discussion by a few remarks, in which he quoted the evidence of Mr. Faraday before the parliamentary committee. Mr. Faraday said that there was no difficulty, as a natural effect, in obtaining perfect combustion of smoke. Imperfect combustion, or the ultimate production of smoke, in all cases depended upon convenience or ignorance. In large fires it depended more upon ignorance than convenience, and if a manufacturer were obliged to burn his own smoke, he would, in a short time, be able to do so without any pecuniary loss.

Pollution of Rivers.

The special question for consideration was,—"How can the pollution of rivers by the refuse and sewage of towns be best prevented?" Dr. Stevenson Macadam read the first paper. He pointed out the difference between the discharges from manufactories and works on the banks of rivers, remarking that a stream receiving liquid from works containing organic matter did not putrefy, providing it was in motion; but a stream receiving organic matter from sewers was liable to putrefy. He instanced three Scottish rivers, the Leven, the Water of Leith, and the North Esk, as illustrations in proof of this, and proceeded to consider the means of preventing the pollution of streams. He said mining discharges could scarcely be prevented, but they were not of so much importance, for the deposit settled on the stones. All practical means for the arrestment of the pollution from manufacturing discharges should be employed. It was a question whether some rivers should not be given up entirely to manufacturing interests; it being a condition that the discharges should not be prejudicial to the health of the neighbourhood. The most effectual method of utilisation was the system of irrigation which had been very successfully carried out at the Craigentinny Meadows, near Edinburgh. The system ought to be compulsory in inland towns; but as to towns on the sea coast, it was a question whether it was not better that the sewage should be poured into the sea, where it would at any rate assist the production of seaweed, which would feed the fish. This question would be best worked out by a local authority, under the direction or control of a royal commission, or a Government inspector; but sanitary measures should be compulsory, and not optional.

Mr. John Newton, C.E., read the second paper, in which he gave some details, showing that in several places sewage was utilised; and he argued thereupon that similar systems might be carried out elsewhere.

Dr. Hawksley read a paper on "River and Air Pollution, with Proposals for the Abolition thereof." He dwelt at considerable length on the facts and characteristics regarding the material which polluted rivers, and on the evil effects arising from the use of impure water. He said any attempt to patch up the present method of drainage would result in disappointment, and he recommended the use of Moule's earth-closets. He advocated compulsory legislation in sanitary matters, and the utilisation of sewage.

Mr. T. Clement Trapp read a paper, in which he condemned the use of water-closets, except in connexion with a system of irrigation, and expressed his regret that the Manchester City Council, in their new measures, did not stipulate for a greater area around buildings.

Lord Robert Montagu, M.P., in commencing the discussion, said he considered this subject lay at the root of sanitary reform. He proceeded to criticise the papers read, and referred to various manufactures and mining operations, to show that the refuse which had formerly been poured into rivers, causing pollution, was now in many instances utilised and found to be very profitable. In most of these cases this had only been done under compulsion, and he contended that by compulsory legislation the purification of our rivers might be to a great extent accomplished. He spoke at some length on the subject of irrigation, of which he was in favour; and he described the favourable results at Croydon and Worthing. He moved, "That while it is necessary to remove as speedily as possible the excreta and refuse from houses, it is advisable to procure compulsory legislation against the pollution of rivers by refuse or the sewage of towns."

Mr. Rawlinson said he would not speak of the papers, but would state a few broad facts. He would not for one moment advocate the pollution of rivers, but it was an advance in civilisation; and we must advance still further. When there were pure rivers in this country, before manufactures were established, there were no sanitary regulations in the towns. Sanitary improvement had swept away many types of disease which then existed. He urged that the discharge of effete matter into running water was an improvement on the cesspool or ashpit amongst crowded dwellings. Manchester had been examined by the late Dr. Southwood Smith and Mr. Holland, to find whether the most severe types of disease were attributable to foul rivers; and they were bound to come to the contrary conclusion. In 1859, when the Thames was so foul that Parliament sat with closed windows, there was a low rate of mortality. Riparian owners did whatever they thought fit with river frontage, and abused the water as they pleased for their own advantage. The rivers were made receptacles for all kinds of refuse, and in the course of time the bed of the river was raised, so that the river overflowed its banks, and great distress resulted. The

Commission on which he was engaged had found in Yorkshire that the manufacturers, without compulsory measures, were doing many things which tended to the purification of their streams. The washings of wool which used to pollute the streams were now cleared of the soaps and oils, and were by no means so injurious. They found the greatest willingness amongst the manufacturers to give them information, and their only plea for polluting the rivers was that it was of no use for individuals to go to great expense to improve the river, when others above them on the same stream were doing the contrary. The products raised on irrigated land were perfectly wholesome, but they were so rich that it was necessary that they should be consumed quickly; and the best method of utilising the grass was to give it to milk cows. Like the previous speaker, he would urge that the earth-closet system was impracticable in large towns. He hoped that the Royal Commission would lead to a practical result, and he was sure that Parliament would only receive such suggestions on the subject as would carry common sense with them, and could be carried into effect for the benefit of all.

Dr. Elliott (Carlisle) seconded the resolution.

Mr. Rylands (Birmingham) said the 49th clause of the Public Health Act gave compulsory power.

Mr. E. Potter, M.P. (Carlisle), spoke of the water around Warrington and in the black country, and of the Clyde, and said it must not be overlooked that if the streams were to be kept pure, there must be separate sewerage for the refuse from manufactories.

Mr. Bateman, C.E., said he did not know how the pollution of streams could be prevented better than by compulsory legislation, and he approved of the system of irrigation; but the difficulty was to know where to apply it in a country teeming with population.

Dr. Trench (Liverpool) said he considered the best mode of removing refuse was with water, by subterranean channels; but he was not wedded to the opinion that water was the only means, and that there should be further investigation before dogmatical opinions were expressed. Still it was wrong to have two systems in the same town.

Mr. Heron, the town-clerk of Manchester, said that the Corporation was wedded to no system, but with them he gloried in the fact that they had persistently refused to sanction the introduction of water-closets into small houses. (Mr. Holland,—"Shame.") He gloried in his shame. The ash-pit, not the cess-pool, was more innocuous in nine cases out of ten than closets inside houses.

The further discussion was sustained by Mr. E. Chadwick, Dr. Holdsworth, and others, and terminated with brief replies and explanations on the part of the authors of the papers, and Lord Robert Montagu, whose resolution in shape of a recommendation to the council, was carried unanimously.

We refer, under a separate heading, to one other subject treated of, and will return to the discussions next week.

CONDITION OF MANCHESTER.

At the Social Science workmen's meeting already alluded to (we avail ourselves in this instance of the report in the *Manchester Examiner*),—

Mr. Godwin said they were aware that the office of one of the branches of the Social Science Association was to inquire into the means of preserving the public health, the best modes of construction of the dwellings of the working classes and the poorer classes, and to obtain laws to protect us against the apathy, the ignorance, and the selfishness of ourselves: he said "ourselves" because all classes were very much alike, and where self-interests were concerned, they were all apt to button up their pockets and forget first principles. It was with reference to this department that he wished to speak to them. Without health the rich man was little to be envied; but without health the poor man had lost everything. But for our ignorance of the laws of health we should not overcrowd our houses in the way we do; we should not subject ourselves to inhale the bad gases that we do. In Manchester the people were breathing a poisonous air; and, when he heard it actually said that smoke was scarcely detrimental to health and happiness, he could not control his indignation at hearing such an observation, and he was told that the air of London had spoiled his temper. He urged them not to have too much objection to a little control in these matters. There were sanitary laws in the reign of Edward VI., and in the days of Elizabeth there was a law to prevent two families cohabiting in the same cottage, which it were well in some cases if we could have revived at the present day. He hoped they would not listen too readily to those who assured them that they would maintain their liberties by opposing the passing of sanitary laws. Money was only good for what it would produce. Draining and paving meant raising and saving, and money spent in these things, and in the adornment of towns, was money well spent, because they conduced to the health and the happiness of the inhabitants. In regard to the adornment of towns, and the importance of art, there seemed to be in Manchester the most suicidal disregard of the study of art that could be well conceived. It was distressing to find that the School of Design was not better supported. A knowledge of drawing at once advanced a man's position; and there were now plenty of opportunities for men to distinguish themselves,—public examinations and public rewards; whilst that which gave the eye the power to see beauty in the sky, in the leaves, and the flowers, tended to increase happiness, to raise aspirations, and improve health. He must state what he had seen in Manchester. He had been round the city that morning, not for the first time, and he had inspected batches of houses which were a disgrace to England and to civilization. He would not say whether there was machinery for getting rid of them, and whether any one ought to be blamed; but it was the bounden duty of all to see that some remedy was applied at once. In the yards between Verner-street and Back Verner-street, he looked into large holes filled with bubbling filth, giving off destructive gases, so that the whole neighbourhood was filled with an unendurable stench. To a practised eye it was almost unnecessary to search for filth, because the haggard faces of the women and the staring eyes of the children told at once that that was the locality in which it could be found. In "Gibraltar" again he had seen frightful places. Might the houses in "Gibraltar," like the fort of that name, never be taken! Unfortunately, however, they were taken, and a succession of tenants went in, in order to be prostrated by illness. In another part of the town which required to be attended to and improved, there was a house overlooking the Irk from which five cases of fever had been removed successively within a few weeks. So sure as any fresh family went into that house, the next week it would be stricken down, for the house was built over three public closets, and the air was unendurable. He implored the working men of Manchester to give their attention to these matters, to study the laws of health, and to help their lawgivers and the authorities rather than impede them; for money spent in sanitary improvement, instead of being a loss, was a gain and a blessing. An unhealthy population was a burden to the State; and, moreover, it tended to increase the criminal population, which was more costly and more injurious still.

In the Health Department a valuable paper on the Health of Manchester and Salford, by Mr. A. Ransome and Mr. W. Royston was read, and included a number of important tables. In the course of it the writers, seeking to explain the present high rate of mortality, said,—"No one cause will account for the full list of disease and death: there are many powerful foes to health at work. Notwithstanding what has been done, the reports which have recently been made to the Manchester Statistical Society by the sub-committee appointed to inquire into the sanitary condition of certain districts in Deansgate and Ancoats give a deplorable picture of those portions of the town. Thus, in Ancoats, within an area of about twelve acres, out of a total of 607 houses, no less than 398, or 65·57 per cent., are single houses, or houses having no passage through them and no back yards; and 'very many of the habitations are in such a condition—partly from the filthiness of the inhabitants, and partly from the smell of privies, drains, and animals, and the dampness of the walls, and, in some cases, the ruinous condition of the buildings—as to be almost intolerable, and totally unfit for human dwellings.' It has been calculated that there are 25,000 back-to-back houses in Manchester alone. This account is but a repetition of the description before given of the state of things fifteen years ago. There are good reasons why the sanitary condition of the cottage dwellings of the town should get worse instead of better. Every physical improvement of a public character involves almost in every case a large destruction of small habitations, which are swept away by hundreds to make way for new streets, railways, public buildings, or warehouses. Although many of the dwellings thus destroyed were in a miserable condition, the state of those which are left rapidly becomes worse. The poor cling to the old localities, and are thus driven to herd more and more closely together, and greatly to overcrowd the houses which remain. Again, although it is now illegal to erect back-to-back houses in and around Manchester, yet in some districts a custom prevails of substituting certain rooms, by which at times the law is practically evaded. By closing the door in the passage between the front and back part of the houses, and letting these portions separately, all the evils of back-to-back houses are equalled, if not exceeded. All ventilation of the houses is prevented, and the back apartments form miserable dwellings, opening upon a narrow passage, with ash-pits and privies close to the door. Giving full credit to the city authorities, and especially to its sanitary committee, for anxiety to amend this most objectionable state of things, the task is of such vast magnitude, and, by the present method of administration, authority is so much weakened, and responsibility so much diluted by division, that no real change for the better can be made without a complete remodelling of the sanitary department of the corporation, and the appointment of a responsible medical officer of health. Mr. John Leigh has recently contributed three most valuable papers to the quarterly returns of the Registrar-General, upon the 'Causes of the vitiation of the atmosphere of Manchester,' and therein shows most clearly what a powerful influence for evil is exerted day after day upon the inhabitants by the various impurities, solid, vaporous, or gaseous, with which the air of the town is laden. Dr. Angus Smith also has found that the atmosphere of Manchester contains an inordinate amount of carbonic acid, and a diminished proportion of oxygen, besides sulphuric acid and other irritating vapours, and probably, also, various organic compounds. It is impossible to enter adequately into this subject within the brief limits of this paper; but there are strong reasons for ascribing a very large part of the constantly excessive mortality of the town to this cause. Its influence is to be observed in the blanched and pallid looks of all the dwellers in the town, but especially of the children, who droop and become etiolated, like plants exposed to the same influences. But the effects of this polluted atmosphere are chiefly to be noticed in the prevalence in Manchester of affections of the lungs, the organs most exposed to its action. Not only phthisis, but other diseases of the lungs, such as bronchitis, influenza, and catarrh, occur much more frequently in proportion to other diseases in Manchester than in London. The small variation in the number of deaths over five years of age, as compared with those under that age, has already been pointed out by Mr. Royston in his paper 'On the Variation of the Death-rate in England.' It would almost seem as if any inquiry into the means of diminishing the excessive death-rate in large towns is reduced to a consideration of the causes of infantile mortality. It will be at once acknowledged that any unwholesome condition surrounding the inhabitants will tell with the greatest force upon the tender frames of young children; and hence most of the causes already passed in review must be held to be in part at work in producing the awful amount of mortality amongst these children. But there are special causes besides. In the year 1860, at the instance of a committee of the Sanitary Association, an abstract was obtained of the causes of all deaths under five years of age, which took place in the year 1859, in the different districts of Manchester. On comparing these with one another, it was impossible not to observe in the poorer districts the excessive number of deaths from such diseases as diarrhœa, whooping-cough, measles, and bronchitis, disorders which are seldom fatal amongst the children of those who are able and willing to take proper care of them. In Ancoats, in the year 1859, out of 1,493, the total number of deaths, 435 were of infants under one year of age, and of these 92 were caused by diarrhœa or dysentery, 109 by convulsions. A careful per-

sonal inquiry by a deputation of the above committee in the same district of Ancoats gave still greater force to this observation, and the conclusion was irresistible, that the excessive infant mortality of Manchester was mainly owing to 'want of care and want of knowledge on the part of parents in the management of their children.' These are some of the causes of the past and present unhealthiness of our town. To the future we must look forward with mingled fear and hope. There is a strong tendency on the part of our population to become more and more massed together; and so long as this continues, there is much reason to fear that the rate of mortality will not materially diminish. Still there is a better feeling abroad respecting measures of sanitary improvement; men's minds are continually turned towards the various methods of ameliorating the state of that lowest stratum of society, which at present is such an opprobrium, and such a source of future danger to the prosperity of the country. So far as knowledge constitutes power, we are in a much better position now for preventing excessive mortality amongst our town population than we were formerly. We know more accurately the effects of impure air, whether arising from simple overcrowding, from accumulations of filth, or from the noxious outpourings of our manufactories. We have learnt not only that it probably conduces to the spread of epidemic disease, by lowering the powers of life, and possibly by favouring the existence of the morbid leaven, but also, what is even more important, that it is a powerful influence predisposing to scrofulous or tubercular disease. We have learnt the value of good water, and know more accurately what dangers lurk in its possible impurities. The cotton famine also, with all its privations, has taught us what are the best and cheapest articles of food, and how they may be prepared and distributed most advantageously to the poor, by means of public dining-rooms and kitchens. We are also more ready to meet outbreaks of epidemic disease; for, if we do not know much more about the diseases themselves, we have learnt more of their mode of distribution and of the circumstances favourable to their progress, and, by taking precautions against infection, we can ride out the storm of infection until its virulence has passed away. Our first care should be to provide better and healthier homes for the working classes. The building of large numbers of well-arranged dwellings for the poor would not only be a right and benevolent undertaking, but, with care and proper encouragement, would also yield a reasonable profit upon the outlay. The corporations of Glasgow and Liverpool have recently proposed to expend very large sums in rebuilding the worst parts of these towns upon improved plans. It would be well if all towns were to follow their example. All back-to-back houses should be done away with by breaking through the partition-walls, and no division between the back and front portion of the dwelling-houses should be allowed. Cellar dwellings should be entirely abolished. Over-crowding should be prevented, not only in lodging-houses but all other dwellings. A complete reformation is needed of the present detestable system of privies and ashpits, either by the substitution of a well-arranged and well-ventilated water system, or by some other means of completely preventing the accumulation of filth and the formation of noisome exhalations. All streets or alleys closed at one end should be made thoroughfares, and all courts or 'wynds' should be opened out at both ends by streets, not by covered passages. Wide, open spaces should be left in different parts of the town. Any fouling of the atmosphere by smoke or by any kind of injurious gases from manufactories should be prevented as much as possible. Reception-houses for infectious complaints should be established in different parts of the town, and upon the occurrence of any epidemic these should be increased in number as the need may be felt. Some more efficient control should be exerted over the sale of intoxicating liquor. District nurses should be appointed in every part of Manchester, not only to tend the sick poor, who urgently need their care, but also to act as missionaries of sanitary truths, to teach the value of the laws of health, and especially to guide mothers in the nurture and management of their children. A medical officer should be appointed to superintend all sanitary improvements, and to be responsible for the proper carrying out of the necessary regulations. Last, but not least, all those who are able themselves to escape from the deteriorating influences of a town atmosphere, should earnestly co-operate with the sanitary associations and Education Aid Society, and with the clergy of all denominations; and what is most important, should endeavour, with care and tact, to bring their personal influence to bear upon the inhabitants of the poorer districts, and, in spite of all discouragements, should strive to raise them from their present depths of ignorance and wretchedness."

The discussion that followed we will notice hereafter.

THE CITY TERMINUS HOTEL, CANNON STREET.

In December, 1864, some time before the completion of the Charing Cross Hotel, we gave a full account of that building, and endeavoured to contribute to the elucidation of principles of planning applicable generally to structures of its class. Another hotel, by the architect of the hotel at Charing Cross, is now so far advanced towards completion, that we are able to present a view of it, and plans of two of the floors. The City Terminus Hotel, in Cannon-street, resembles the Charing Cross Hotel in the position with reference to a railway-station and booking-offices; so that some of the arrangements of plan in the two buildings are correspondent. In the details of the structures, and the fittings, there is so much resemblance as might be expected; whilst in the decorative character of the designs, there is just enough to show that the two works are from the same hand. But there were objects to be attained in the Cannon-street building, in some respects different to those in the other case; and the peculiarities of site, affecting the entrance, the staircases, and the lighting of the basement, involved even greater difficulty. The decorative resemblance is chiefly comprised in the facts that both buildings have pavilions at the ends of the principal front, with high truncated roofs, wherein ornament in zinc plays an important part; that they have each a Mansard roof to the portion between these wings, and chimneys having small columns at their ends; that in each case there are enclosed porches to the wings, and a pent-roof for the whole length between; that in each there are balconies with flower-vases on the pedestals, and with the supporting cantilevers of the same character of profile; that the nail-head ornament of the Charing Cross Hotel rustication is repeated in the later work; and that terra-cotta is used. Nevertheless in the main forms that are correspondent as described, there are important differences of detail.

The objects to be attained in the planning of the City Terminus Hotel differed from those in the other case insomuch as the provision for public meetings and banquets was to be a leading feature. Thus whilst the design includes a good coffee-room, and the other requisites for travellers and residents, it has also a great hall for public dinners and balls, and a large meeting-room; and it has a restaurant, as well as a chop-room and a luncheon-bar, and besides the refreshment-bar and the dining-room that are immediately attached to the station. Including the ground-story, which we have alluded to as being chiefly appropriated to the railway booking-offices, there are four ordinary stories in the principal front of the building, above ground, and two stories in the roof. Between the pavilions, however, only one story of dormers appears in front. The lighting to the top-attics is partly managed after the fashion of a clerestory, at the back, above the corridor,—that is, so far as regards the range of dormitories towards the front of the building. In the Charing Cross Hotel there are five stories of ordinary windows, including a mezzanine; whilst each pavilion has an additional story; and there are two ranges of dormers in the centre-portion of the front, and three ranges of dormers and lucarnes in the pavilions.

The frontage of the Cannon-street building is about 213 ft. in length: that of the Charing Cross Hotel is 227 ft.,—the railing in the Strand being 11 ft. longer. As, however, the Cannon-street building occupies merely the area of ground at the end of the station, or has nothing resembling the Villiers-street portion of the Charing Cross Hotel, the accommodation afforded is considerably less than that in the other case. In the Charing Cross Hotel, the Villiers-street frontage is of great importance for the lighting of the offices: for, as the street there descends, many of the windows, including those of the kitchen, are wholly above ground. But in the Cannon-street Hotel, windows of the ordinary kind could be got only at the two ends of the ground, or east and west; and the kitchen, which is at the east, had to be lighted from an area.

The site of the Cannon-street Hotel and Station is bounded on the east by a new access to the southern portion of Bush-lane, or westward of the present junction of that street with Cannon-street,—and on the west by Dowgate-hill. Between the limits, Cannon-street has a considerable descent from east to west; moreover, the site and platform-level of the railway-station had been so fixed, by the engineer, that there is a somewhat steep incline everywhere from the station to the street. These conditions have led to the peculiar disposition of the enclosure of the forecourt (not included in our plan,) along with the ways of entrance and exit, which are certainly less convenient for carriages than those of the Charing Cross station. It is not the arrangement of the single gate for entrance from the street, and one for exit,—the latter close to the other, and requiring that a carriage going westward should make several rather awkward turns,—that is to be regretted, so much as that of the steps (shown in our plan), which have to be ascended by every one who arrives in a carriage, and is set-down at the booking-offices. Persons hastening to catch a train, and not accustomed to the station, will be very liable to accident. The cab-exit way, from the station, of course enters the forecourt in the western half of the ground, or opposite a portion of Cannon-street that is lower, by 2 ft. or 3 ft., than the spot where the entrance-gate, opposite the booking-offices, is. In fact, there is a total descent of 9 ft. or 10 ft. from the platform-level, to the front in Cannon-street which is opposite the cab-exit way at the building,—the total descent to the north-western angle of the ground being as much as 12 ft. nearly. The doorways of the booking-offices are distant about 90 ft. from the Cannon-street line, and having the pent-covered footway in front of them, 13 ft. in width, and level from end to end of the building, excepting where cut through by the cab-exit way. Thus it was scarcely possible to plan any other route for the outgoing carriages than the circuitous one which got over the one evil, of a very steep incline. As regards the access to the booking-offices for persons arriving on foot, the inconvenience has been reduced to the smallest possible quantity; if indeed the conditions are not turned in every respect to advantage. A footway on an inclined plane leads from the north-eastern angle of the ground, or the highest part in Cannon-street, to the level of the booking-offices footway; and there is a similar incline, parallel with Dowgate-hill, at the opposite end, but in this case reached by a flight of twelve steps, required from the descent of Cannon-street. As regards the original incline opposite the centre of the building, and to be ascended by pedestrians who choose to cross the fore-court, it is surmounted by the help of steps, in all about 15 in number: half of them, leading up from the fore-court to the same level as that reached by the side-inclines, that is the footway to the doors of the booking-offices, are shown on our plan; and the other half afford the ascent to the fore-court from the street-footway. The feature of the steps up to the booking-offices being dictated, it has been skilfully seized hold of, and turned to account by the architect, for getting light and air to a portion of the hotel-basement that otherwise would have been quite dark.

The dimensions of the building on the ground, taking in all projections, except those of the porches, and areas, may be stated as 218 ft. by 92 ft., the latter being the dimension through the building. The middle of the Cannon-street front, which comprises eleven bays, is recessed 7 ft., taking the extreme dimensions. The porches project 14 ft. The area to the kitchen and scullery windows, at the east, is 5 ft. in the clear width; and there are an area and cellars under steps and footway of the booking-offices. But out of the space of which we have just given the dimensions, an area of about 92 ft. by 40 ft. is deducted from the upper stories and the attics; this space being above the roof of the great hall, and bounded on one side by a portion of the north end-wall of the railway-station. The height of the main portion of the building, comprising the four ordinary stories, is 76 ft. 3 in., measuring from the ground-floor line (which is 10 in. above the level of the rails), to the top of the cornice. Above this, to the highest part of the main roof is about 23 ft., and to the highest part of the pavilion-roofs, 32 ft. A tower at the south-east angle, containing a ventilating-shaft

and the kitchen-flue, rises higher; whilst the highest points of all are reached by the gilded metal-work finials of the spire-cappings of the two turrets which are grouped with the pavilions in the principal front. Beyond the area of plan that has been mentioned, and within the railway-shed itself, are, on the western side, the refreshment-bar for the station, and the serving-room, with the station dining-room over; and, on the eastern side, parcels' offices of the railway. In front of the building, a portion of the length of the eastern end of the forecourt, a narrow strip, is occupied by offices, one story in height above the ground, for the railway-company or other business-purposes; and here also there is an ascent by steps, affording access to the booking-offices platform direct from Bush-lane.

The whole of the basement, with its mezzanine, and one of the arches under the station, and the whole of the floors above the ground-story, are appropriated to the purposes of the hotel. Of the ground-floor, the only available space for the hotel consists of what falls within the western pavilion and its turret, and of the small space at the south-east angle of the ground, which has been appropriated to service-stairs, a store-room, lifts, and the kitchen-flue.

The entrances to the hotel are on two levels. There is an entrance from the front, which leads straight through the building to a second entrance which is from the arrival-platform of the railway. The latter entrance is close to the foot of the principal flight of steps of the grand staircase, near to which also are the rising-room for luggage, and the west service-stairs. The principal entrance to the hotel however may be said to be one that there is on the floor below. Dowgate-hill descends a story; and, corresponding almost with the basement of the rest of the building, stands clear above ground at the western end of the structure, and has its own basement below. The staircase in fact commences from the level of the Dowgate-hill entrance; and there, rather than in the forecourt of the station, carriages may be expected to take-up and set-down. A small office is placed on one side this entrance; and there is a messenger's closet on the other, with one window looking to the doorway, and one to the service-stairs. The rising-room for luggage is at hand; and opposite the entrance is a porter's room. Next Cannon-street, on the same level, and also entered from Dowgate-hill, are the luncheon-bar and chop-room, with a serving-room, and with lifts from the refreshment-room kitchen and scullery which are below; and which last are lighted from an area on the Dowgate-hill side. In the basement, here, are various cellars and cleaning-rooms, besides a communication by stairs to the railway refreshment-room. A thick wall separates this portion of the building from that which is under the booking-offices; and in its thickness are the principal lifts for beer and wine. They could not conveniently pass through the booking-offices. The manager receives wine, by one of the lifts, on the first floor, in his bar and room, which are placed opposite to a serving-room of the great hall, and are within short distance of the "restaurant dining-room" on that floor. Of the remainder of the basement, what is under the booking-offices contains coal- beer- and wine-cellars, a boiler- and engine-house, and an oven; places for stores; a plate-room, and a "strong-room;" a steward's room, a servants' hall, a servants' sitting-room, and an office; whilst in a mezzanine to this basement are some of the dormitories and bed-rooms for servants. A longitudinal corridor, 15 ft. in width, runs from the position of the western pavilion to that of the eastern pavilion, in which is the kitchen. It is lighted by a borrowed light, at the end, from the kitchen.

Owing to the peculiar requirements of the railway-station, there was the utmost difficulty in getting light to the basement-rooms which are between the pavilions, whether at the front or at the back. In the latter case, it might have seemed easy to contrive areas, with glass floor-lights in the station, as at Charing Cross. But experience shows that such lights are apt to be covered with luggage, or something less moveable. The arrangement at Cannon-street, therefore, on the station-side, has been one of an enclosure, to the area, formed by the structure of pigeon-holes in which the luggage-labels are kept. Some use, however, has been made of an ordinary arrangement of floor-lights: but, as regards the basement and basement-mezzanine rooms in front, the chief light is obtained by filling-in with glass the risers of the steps to the booking-offices terrace, (which steps appear in our plan,) the whole length of the front between the porches of the pavilions, and including the returns at the cab-exit way. Frequent apertures are left for ventilation. The glass is fixed in iron framing which carries the steps; and these steps, or treads, are so set in the framing, that they can be taken out at any time and renewed. By the arrangement of the risers, there is a well-lighted area beneath the terrace; and in the area there are larders, places for cleaning knives and boots, and various conveniences.

The kitchen, at the eastern end of the basement, measures about 42 ft. by 22 ft., exclusive of two large recesses, in one of which may be a serving-window. Attached to the kitchen are two large sculleries. The serving-lobby and lifts are close to the east service-stairs; which occupy the south-east angle of the building, as before mentioned. The cook's room is in a mezzanine at one end of the kitchen, over one of the sculleries; and at the same level is a large cistern. The arch under the station-platform is much of it appropriated to cellarage for the refreshment-room of the station. The coal-shoot is placed at the base of the eastern wall of the cab and carriage exit shown in our ground-plan.

On the ground floor, as our plan shows, the whole of the space, exclusive of the western pavilion, and of the east service-stairs, with the lifts and kitchen-flue, is occupied by appurtenances of the station. There are five or six sets of ticket-taking places served by three sets of clerks; that is to say, in the principal office the clerks are placed between opposite windows, or openings,—according with the system in use by some of the companies, but not on several of the older lines. At the east end of the ground are the telegraph-office, entered from under the porch, and the cloak-room, 42 ft. by 23 ft.: then there is the entrance-passage for luggage; and then follow one of the ticket-taking places and a passage to the trains, the space for clerks, the central space of the general booking-office, and then clerks and passage as before, but reversing the positions. The whole booking-office measures 78 ft. by 33 ft. A centre-passage leads from the principal booking-office, to the trains; and it has on each side of it the different waiting-rooms, the larger rooms being 23 ft. by 22 ft. each. A smaller booking-office is placed next to the hotel-portion of the ground-story, or separated from the other by the inclined roadway for the cabs and carriages leaving the station. Beside the roadway is a footway on the terrace-level, fenced in by an iron rail and granite posts. Over the cloak-room and telegraph-office is a mezzanine, with a sitting-room and three bed-rooms, probably to serve for residence of the telegraph-clerks.

As regards the hotel itself, there are, as already mentioned, two entrances on this floor, one from the front of the building, and the other from the arrival-platform of the station, besides the entrance on the lower floor. The corridor from the entrance that is in front, passes by a public dining-room, 42 ft. by 23 ft., called the lower restaurant,—there being over it, the "restaurant dining-room." At the north end of the "lower restaurant" is a waiter's bar, which can be entered from the exterior, under the porch, and which has attached to it different lifts. One of these is for wine; and the other communicates with the kitchen that is on the basement, or floor next but one below. The refreshment-bar of the station, and the dining-room over it, we may observe, have their separate staircases, including service-stairs. The steps and landings of the principal staircase are carried by wrought-and-riveted iron girders at the ends furthest from the wall; and they are of rough York stone adapted to receive treads of Hopton Wood stone, (which can be renewed,) and, similarly, covering to the risers, of stone or tiles. The bottom-steps of the principal flight terminate with a bold sweep or curtail; the balustrade is carried on a stone plinth or string; and the newel, at the foot, has attached to it a scroll-buttress. The space occupied by the principal staircase measures 38 ft. by 24 ft.

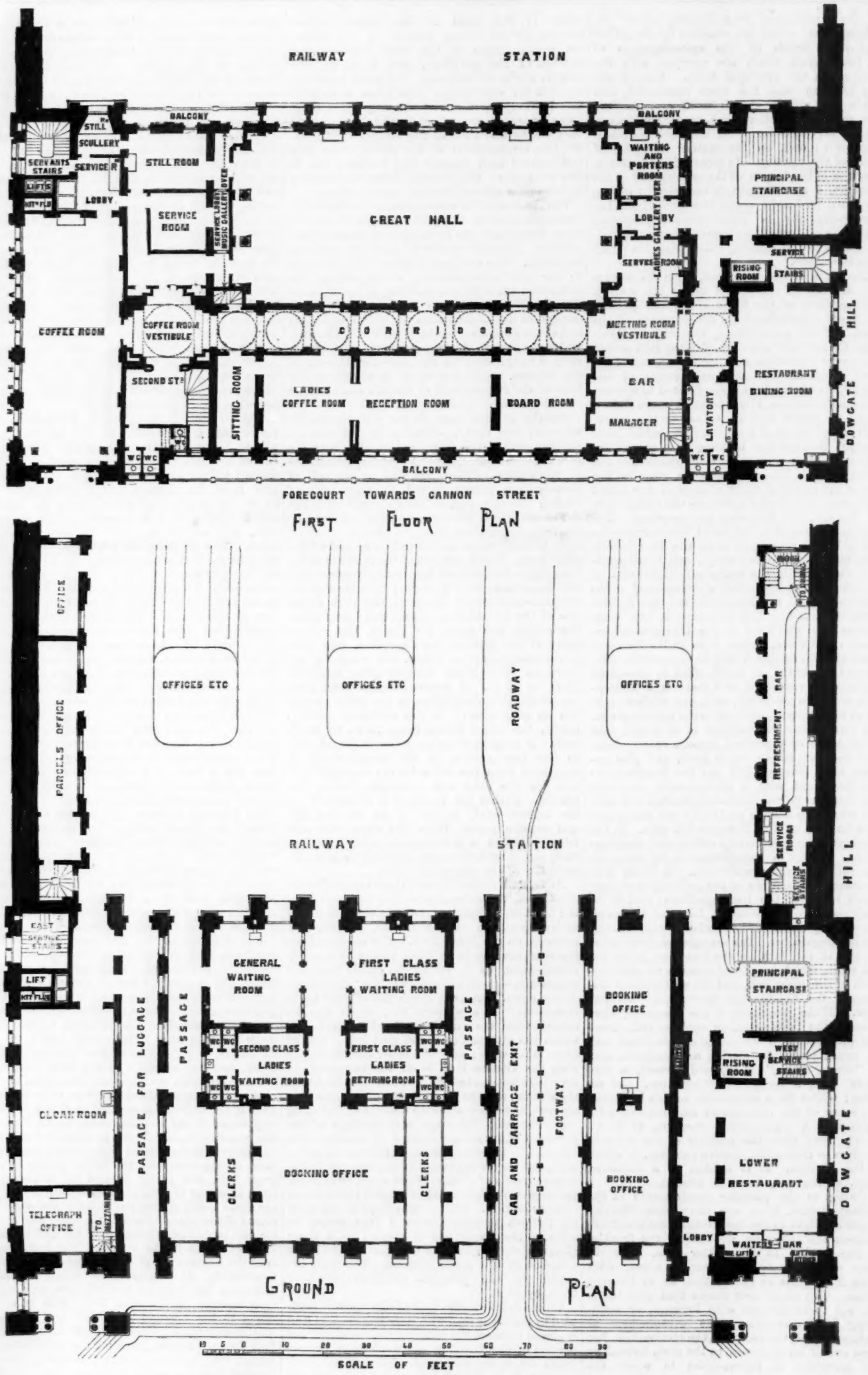
On the first floor, the bulk of the space is occupied by the Great Hall with its adjuncts. The Hall is placed between the principal staircase, and that portion of the building where the east service-stairs are, at the other end. The hall will measure 93 ft. in length, or about 114 ft. with the recessed galleries, — one for ladies, and the other for musicians; and it will be 41 ft. in width. The height to the ceiling in the centre will be about 36 ft. There will be Corinthian columns at the ends, and pilasters at the sides, carrying an entablature with cantilevers. From this entablature will rise a cove to carry the central *plafond* of the ceiling. The hall is lighted partly by double-glazed windows, in two tiers, from under the station roof,—the upper tier arch-headed,—partly by lunettes groining into the cove, and partly in the *hypathral* manner, somewhat as practised by Mr. Barry in the Halifax Town Hall, but improved. The glazing of the coffers will take the square-domical form. An outer roof, glazed, will be thrown over all; and the space between this latter roof and the ceiling will be in communication with the flue of the kitchen, that ventilation may be effected. There are balconies looking into the station from the windows of both levels; but should the noise of trains be found to interfere with uses of the room, the side-windows could be bricked up,—the lighting from the top being itself adequate. The principal entrances to this hall are one at the western end, or from the principal staircase, between a waiters' room and a service-room which are under the ladies' gallery, and one in the middle of the side from the main longitudinal corridor of the hotel. There are other entrances for the service, including what are at the eastern end.

The corridor, 10 ft. in width, leads from the restaurant dining-room, to the coffee-room; which latter occupies the whole length of the eastern frontage, excepting what is appropriated to the service-stairs, and the flue and lifts from the kitchen. The coffee-room is 59 ft. in length and 24 ft. 6 in. in width; and is lighted by five windows in the eastern side, and one at the end in the principal front. The restaurant dining-room in the western pavilion measures 42 ft. by 23 ft. One of its entrances is from the service-stairs attached to the principal staircase. Near to it, in the turret of the front, are lavatories, besides two of the W.C.'s. The longitudinal corridor, commencing from the restaurant dining-room, but entered by a transverse passage from the principal staircase, starts with a space called the meeting-room vestibule, which is decorated with Ionic columns in the angles, and is separated from the serving-room on one side, and the bar and manager's room on the other, by glazed screens. The wine-lift is within the bar: so that the service of wine can be conducted and supervised expeditiously and completely. The manager has a room in a mezzanine (of which the stairs appear in our plan), as well as a "bar-cellar," a place for stores, and a W.C. The corridor, running eastward, and having the ceiling formed as domes and pendentives carried by arches springing from pilasters, passes by a "board-room," 22 ft. by 21 ft.; a "reception-room," 32 ft. by 22 ft.; and a ladies' coffee-room, 22 ft. by 21 ft., which can all be thrown into one suite, and by a small sitting-room, and ends in the coffee-room vestibule. At this point, a second staircase ascends.

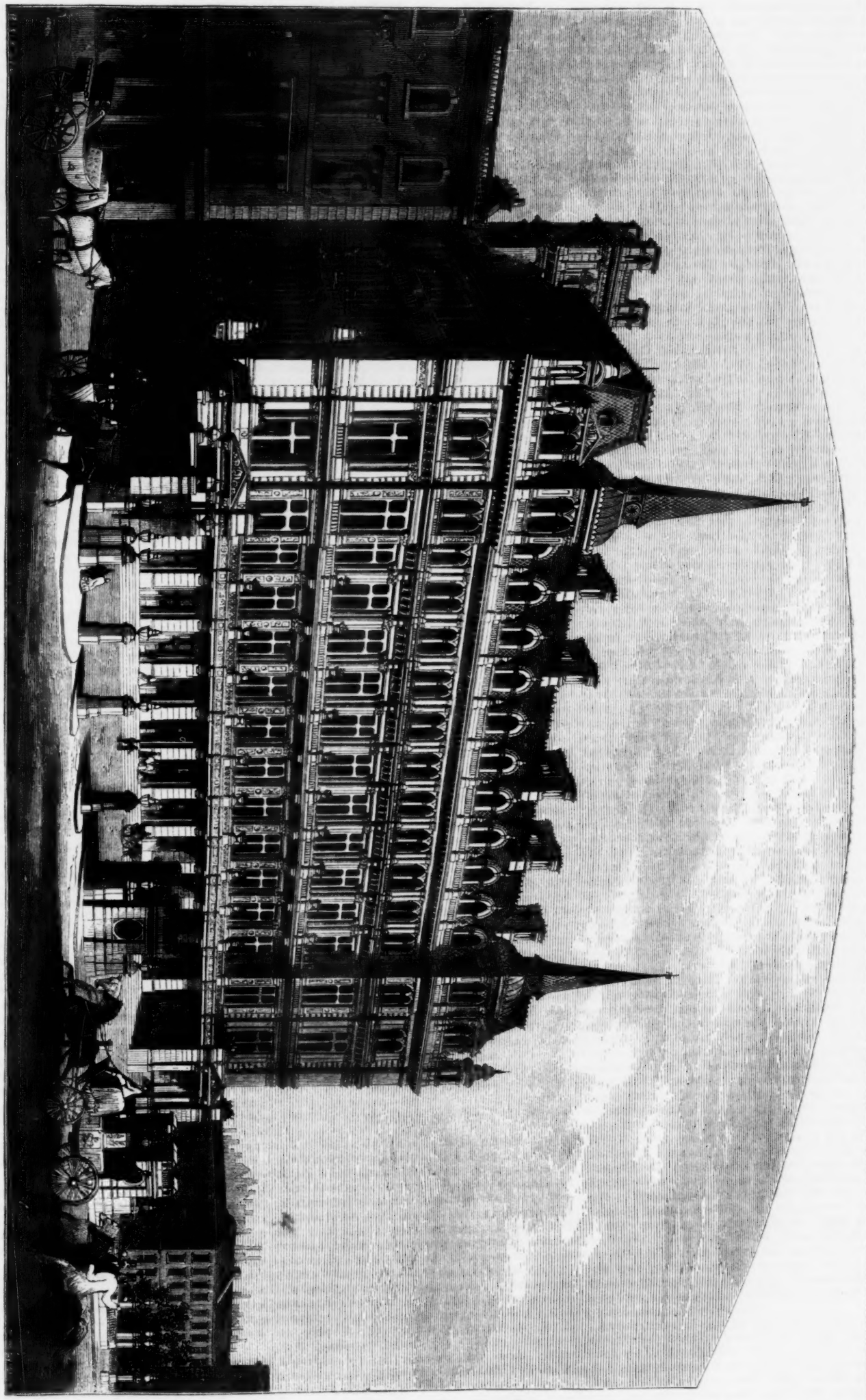
The windows of this first-floor, between the pavilions, have a continuous balcony, which is carried on cantilevers. From these last are projected the supports, which at the other end are tailed into the wall, from which is suspended the pent-roof over the doors of the booking-offices.

In the second-floor, the principal feature is a large meeting-room. It is very nearly 80 ft. in length, is lighted by seven windows in the front, and has attached to it a large business-room at one end, and a small ante-room at the other. The longitudinal corridor between two ends of the building is omitted on this floor: the way would be by the staircases, unless through the meeting-room. There is another business-room, over the restaurant dining-room; there is a large dining-room over the ladies' gallery of the great hall, and partly carried by suspending-irons from one of the girders over the hall; there are three small dining-rooms over the service-rooms of the opposite end of the hall; and there are two large dining-rooms over the coffee-room. The W.C.'s are in the turrets of the front; and next the western turret are lavatories, as on the floor below. At this level the principal staircase ends; but from the landing, a smaller staircase ascends to the third floor: this is additional to the "second staircase" and the two service-staircases. Over two portions of this floor are mezzanines, providing four small dining-rooms, two bath-rooms and a lavatory,—these reached from the second staircase,—and a linen-room, which is partly in the western turret, and is reached from the service-stairs.

On the third-floor, there is again a business-room over the restaurant dining-room; and there



THE CITY TERMINUS HOTEL.



THE CITY TERMINUS HOTEL, CANNON STREET, LONDON.—Mr. E. M. Barry, A.R.A., Architect.

is one over the principal staircase. The remainder of the floor is filled with bed-rooms, dressing-rooms, and bath-rooms, along with four rooms that are intended for sitting-rooms. They are all lighted from the three fronts of the building, and from the open space which there is above the roof of the great hall. They are reached by a longitudinal corridor, 5 ft. in width, running from the landing of the second staircase, and by transverse passages which are connected with the other staircases,—one of them, in the western division of the building, passing near the rising-room for luggage. The corridor gets part of its light, borrowed, by an opening over the fire-place, in the wall of the west business-room.

In the fourth-floor, one of those in the roof, lighted by dormers, there is a billiard-room, in the south-west angle of the building, with lavatories attached.

The attics above, contain some ordinary bed-rooms, lighted from the space over the great hall, and servants' dormitories. The latter have a ceiling taking the slope of the roof; and their windows are placed looking in the same direction as those of the other bed-rooms, but just above their roofing and that of the longitudinal passage. This last is lighted from the top. In each of the pavilions there is a small space at the top of the roof, for storage.

The heights of the principal stories, or measured from floor-line to floor-line, in the hotel, are, for the ground-story 20 ft., the first-floor 20 ft. (the hall being of greater height, as stated), the second-floor 21 ft., and the third-floor 14 ft. 6 in.; whilst the fourth-floor, which is in the roof, may be 10 ft. or 11 ft., or 15 ft. in the pavilions. Those bed-rooms in the attics which have flat ceilings may be about 8 ft. in the clear height.

Much of the space in the building being devoted to rooms for dinners and meetings, there are few bed-rooms in proportion to the size of the structure, or as compared with the provision in the Charing Cross Hotel. There appear to be eighty-four bed-rooms, and dressing-rooms capable of being appropriated as bed-rooms; that is to say, twenty-seven on the third-floor, thirty-seven on the fourth-floor, and twenty in the attics, besides the servants' dormitories. These last, in the attics, are supposed capable of providing for forty-six beds, there being ordinarily four or six beds in a room, and about 800 cubic feet of space for each bed. The space is not more than necessary, considering that generally the ends of the beds have to be placed where the slope of the roof comes within 5 ft. of the floor. To this provision for servants must be added that in the basement, and its mezzanine, or perhaps ten more beds. There are five bath-rooms in the building.

The corridors of the principal stories will receive part of their light through doors of some of the rooms; which are glazed in the panels, besides having fanlights over. Mirrors will be placed in recesses where there are no doors, and where effect can be produced. The coffee-room will have large mirrors on one side, excepting in the middle where the door is, corresponding with windows opposite; and the ceiling will be divided in the length into five compartments, by beams with enriched soffits, each compartment being filled in with three circles, having a flower in the centre of each, and having a margin of enriched mouldings. The end of the room, where the large window is, opening on to the flat over the porch, is treated as a recess with Ionic columns.

Much of the internal plastering is still in progress. The drawings show that the great hall will be elaborately enriched in the ceiling and cove, as well as on the walls; where there will be four chimney-pieces to fire-places, as prominent features. For plastering the walls of the principal corridor, Keene's cement, second quality, is used, gauged with stone-dust. In the rendering of the plain faces, Portland cement is used; whilst the mouldings are prepared with Keene's cement gauged with one-half sand. In some of the ceilings the canvas-plaster is used, for lightness, and to escape slow drying. The quarter-partitions have three thicknesses of lath and plaster, or including one thickness which is worked in the middle, between the quarters. The corridor-floors, as well as the staircases, are of "fireproof" construction: the floors, generally, or of the rooms, are boarded.

On the exterior of the building, much more use is made of cement than in the case of the Charing Cross Hotel. This must be regretted. Terra-cotta is extensively used. Amongst the leading features are, the spire-capped turrets, and the continuous balconies; which latter, to the windows of the first and second floors, between the pavilions, are carried on bold cantilevers. Also distinctive of the building is the mullioned-and-transomed filling-in of the window-openings, in these floors, and the carrying the nail-head ornamentation on to the faces of the dividing members of the opening. The pilasters on the piers between the windows of the first-floor, are enriched somewhat in the manner of the Renaissance: the piers of the story above have columns. The top-story below the cornice is treated as a range of coupled lights, arch-headed. The pedestals of the crowning balustrade have rusticated obelisk-formed terminals, or of Elizabethan character, in terra-cotta; each one having a small gilt ball at the top. The dormer-windows in the centre of the principal front are arch-headed; and the slates between them are cut ornamentally. It is, perhaps, a slight defect that the crowning balustrade of the building interferes somewhat with outlook, or excepting at the pavilions. The windows of the pavilions are emphasized by added columns, or pilasters; that is to say, these members are coupled. The dormer window is made an important feature,—two arch-headed lights, with pilasters and trusses, carrying a pediment whose tympanum is enriched. Similar windows are repeated in a row at each end of the building. That angle of the pavilion which is the same as the angle of the building, has in each story a broad *anta*-pilaster with enriched capital; and at the top, the angle is crowned by a small turret, or tabernacle, with domical capping and a gilt spike-finial. In the upper part of the pavilion-roofs there are lucarne-lights. The roofs are ornamented at the angles, and at the edges round the flat top of each pavilion, by very bold ornament in stamped zinc, executed, like that of the other hotel, by French workmen. The turrets of the principal front serve as the bonds of union between the decoration of the centre, with which they most assimilate in detail, and that of the pavilions to which they belong by position. Each of them terminates in a belvidere-story, open, above the cornice, and with a domical covering, ending in a spire,—the whole being square on the plan,—and the domical portion and the spire being in zinc, in the latter formed as scales. The porches are plainer than those of the Charing Cross Hotel; but we prefer them as to design. The inclosure of the fore-court, with lodges, steps, and stone-posts, will be much better in effect than the inclosure at the West-end hotel,—however inferior in point of convenience may be those arrangements which have been governed by the railway-engineering. The front of the hotel looking into the station has three lofty and bold arches as its leading features, each spanning three bays of the balconied windows, and having coffers in the soffits enriched with rosettes,—the whole being very effective, though in cement. We may add that taste is shown in some of the decorations of the refreshment-bar of the station. The whole building, exclusive of the booking-offices, as also of the station, is likely to cost about 100,000*l*. The work is being executed by Messrs. Lucas, Brothers, under Mr. E. M. Barry's direction, Mr. M'Gill being the architect's clerk of the works.

The building is likely to be completed soon after Christmas, so that the hotel may be opened early in the spring. At present, in the great hall, much remains to be done.

ITALIAN NOTES.

The other day we enjoyed a private view of the bronze *David* cast by Papi, from the original of Michelangelo, at the foundry, an establishment that dates since the change of Government in Florence, where various other works are now to be seen on application. It is not too much to say that the impression received from that colossal statue is completely *new*, and the sense of beauty it raises in the mind almost such as to eclipse that received from the original in marble; this being, perhaps, due to the advantage of seeing the bronze at a level, so much more suitable for appreciation than that from which we look up to this marble statue on its high basement before the Palazzo Vecchio, whereas, in the foundry, we may either examine the figure from the level where it stands, or from a flooring above, at a height little lower than the knees. Especially were we struck by the power of grandeur of the head, the expression of indomitable energy, combined with characteristics of youthfulness, to a great degree lost, and from a distance entirely so, in the original marbles as now placed beside the clumsy *Hercules* of Bandinelli. That celebrated colossal statue, one of the few left complete, by Buonarotti, which has stood where we see it in open air for more than three centuries and a half, was ordered by the *Signoria* as an intended symbol of the force and justice of the Florentine Republic in her resistance against oppression (see the archæological papers in the *Calendario Fiorentino*, a valuable but defunct periodical), was commenced in 1501, and erected before the palace in 1504, the great artist having had the disadvantage of working a block of marble already used (in 1463) by another sculptor, Agostino de Guccio, ordered to prepare some other gigantic figure for adornment of the principal piazza, but which, it seems, was abandoned soon afterwards both by employers and employed. In a popular tumult, excited by hatred against the Medici, that broke out on arrival of intelligence of the siege and sack of Rome, in 1527, the Palazzo Vecchio was attacked, and in defence some missiles hurled from above struck the statue, breaking off the left hand, with part of the arm, afterwards fastened on (with the original pieces, fortunately in no part lost), by contrivance but too conspicuous at this day. Otherwise the marble has only suffered through some discolouring and a partial duskiness, the natural effect of exposure, and the project has been deferred to a committee to have it removed to the museum in the "Pretorio," that the bronze may succeed to its place in the open air,—a question not yet decided, public opinion being, as we understand, in favour of the removal. At the foundry we also see, at present, beside the *David*, a statue almost alike colossal, in the transitionary stage before casting in bronze,—namely, a clay model covered with a coating of yellow wax, by Cassiano of Turin, and destined for some public place in that city, as a monument to Colonel Lamarmora (brother of the General), who fell in the Crimean war, here represented in act of combat, with drawn sword in hand and plumed hat on head, the costume that of an officer of "*Bersaglieri*." Not well for the artist's reputation was it to place this figure beside the majestic creation of Buonarotti, for its conception is vulgar, its action not only violent but furious; and, if the gallant Colonel could speak in effigy, we should expect some tremendous oath from his lips! From such a work we turn with relief to others on exhibition at the foundry;—bronzes from the *Perseus* of Cellini, reduced in scale; the *Venus*, wringing her hair after the bath, of Gian Bologna (original at La Petraja, the royal villa near Florence); another head, in all its appreciable grandeur, of the *David*, and several fine specimens of *ornato*. On the 19th inst. the "Sindaco" of Florence signed a contract with the firm of Laidlaw (Glasgow) for the construction of the aqueduct, long since projected, to supply this entire city with water; the firm having deposited 10,000 francs as first instalment for security, which will finally amount to a revenue of 40,000 francs before the works are completed; the water to be brought from mountain sources, and certainly most desirable, as the present potable supply in Florence is inferior, hard, and unrefreshing to taste. Except in the Boboli Gardens, the ornamental fountain is a feature here unknown. On the 18th ultimo appeared, *affiché* in the streets, a proclamation from the Royal Commission for the Paris Exhibition, signed by the President Devincenzo, setting forth the importance to the national honour and interests of the object in view, and calling on all local authorities zealously to co-operate; and on the next day was published a circular from the same Board, addressed to all prefects of provinces, expressing the regret for the limitation of time and scantiness of financial means, but not the less the confident assurance that all responsible will answer worthily to the calls of duty and patriotism. Allowing for the usual superfluities of rhetoric that characterise Italian profession and promise on all occasions, we may conclude that the steps taken by this committee have been, on the whole, judicious, the proof of aroused energies satisfactory.

An architectural novelty here (Florence) is the large edifice, now nearly complete, on the Piazza S. Marco, for the Ministry of War, built round a quadrangle in three stories above the ground-floor, of imitation stonework, with considerably projecting cornice, dog-tooth and other mouldings between the window-ranges, and horizontal

frontispieces to the windows themselves; altogether a thing of which we cannot report favourably, wanting relief and character,—in spite of scale, insignificant. The Corsi Palace, by the architect Buonajuti, has been also criticised for want of relief, but leaves the other contemporaneous performance quite in the shade. We may expect improvements and added dignity to the Piazza della Signoria from the decreed demolition of the plain and ponderous building once the post-office opposite the Palazzo Vecchio, and from of old known as the Tetto die Pisani.

The following, which has gone the round of the Florentine papers, may be read with interest:—"Out of regard for justice, it should be stated that the pictures of the Doge's palace, referred to in the letter from the Venetian Institute to General Menabrea, published in several periodicals, have been restored in consequence of the energetic remonstrances of the conservator of the same palace, Signor Paolo Fabris."

THE THEATRE.

New Holborn Theatre.—In our brief notice of the new theatre, last week, we omitted to say that the architects were Messrs. Finch Hill & Paraire. We gladly supply the omission.

Haymarket.—Mr. and Mrs. Charles Mathews have brought back the "Overland Route," Mr. Buckstone also playing his original part, and this, with "The Critic," suffices to fill the house. In the latter play, the double personation by Mr. Mathews, is a masterpiece of art. A new comedy is promised.

At the *Princess's*, Mr. George Vining has revived "The Triple Alliance," a neat and interesting comedietta, he himself playing with excellent effect the principal character. "The Huguenot Captain," admirably acted by every one concerned in it, maintains its attractiveness.

The *Royalty Theatre*, in Dean-street, under the intelligent direction of Miss M. Oliver, steadily improves its position. The house has been very pleasingly decorated by Mr. E. W. Bradwell, a name long honourably known in connexion with theatrical decorations.

Gallery of Illustration.—Mr. and Mrs. German Reed and Mr. John Parry have re-opened with the "Yachting Cruise," and the inimitable "Wedding Breakfast." A novelty is in preparation, but will scarcely be needed for some time.

THE NEW THEATRE IN LIVERPOOL.

The Prince of Wales Theatre and Opera-house, built by a limited company, will be opened on Monday next. For the particulars now given we are indebted to the *Albion*. The site selected is in the centre of the town, adjoining the principal railway and the leading hotels. Mr. Salomons, of Manchester, was the architect. The building has a front to Lime-street, which is of the Italian order, faced with fire-brick and Stourton stone, while over the middle windows are carved busts of Shakspeare and other great masters of the drama and of opera. There is a separate entrance to each department of the house; and a covered carriage-drive running the entire length of the building. The entrance from the carriage-drive leads direct to a commodious crush-room, attached to which are gentlemen's retiring-rooms, including a smoking-room. There is also an entrance to this crush-room from the centre of the front in Lime-street. The room will be decorated. From this apartment a staircase, 12 ft. wide, leads to the Foyer, on a level with the ground-floor of the theatre. This Foyer, which it is intended shall be handsomely furnished and decorated, will form an apartment for introductions and conversations during the intervals between the plays or acts. Adioining, to the right, are the ladies' retiring-rooms, while a short staircase leads to a refreshment-room beneath. From the Foyer there are two doors leading into the body of the theatre, which, contrary to the usual practice, is devoted to stalls, dress circle, and private boxes, the pittites having been promoted to that which is usually the dress circle, principally with the object of affording space for greater numbers than the body of the theatre can conveniently accommodate, the seats being there 800, while in the body they are only 400. They, too, are supplied with a roomy Foyer, and with retiring-rooms. The entrance to the pit circle is from the right of the front in Lime-street, by a broad and decorated stone staircase. There is a sufficient space between the Foyer and the dress circle for a promenade.

The entrance to the gallery is from the rear, in Pudsey-street, and the stone staircase is wide and lofty. The gallery itself is light, airy, and commodious. It will seat 1,000 persons. Every seat in the house, unless it be a few in the private boxes, is said to command a perfect view of the stage. The decorations in all parts of the house have been entrusted to Messrs. Jeffery, and are being superintended by Mr. Pantenius. The ceiling will bear portraits of the great masters of the drama, and gilt and tinsel and rich colours are being applied with effect. The proscenium is about 29 ft. square; but it represents only a third of the width, and not a fourth of the height behind. The machinery of traps, ropes and drums, and slides, is of the most elaborate kind, much of it new in idea. There are drums and pulleys in the flies, 75 ft. above the stage, and pulleys and drums in the cellars, 25 ft. below it. The stage has been constructed under the superintendence of Mr. H. Drummond. Above the level of the proscenium there is a scene-painting room, wherein scenes of the largest size may be painted and lowered direct to the stage. Another arrangement, the invention of Mr. Salomons, the architect, is that by which a single person, placed in front of a system of taps, effectually controls all the gaslights of the stage and of the house, and he can, by a touch of an electrical button, relight instantly, if needful, every burner in the house. Another new and excellent arrangement is that in regard to the footlights, which are sunk slightly below the stage level, but by a system of reflectors throw a strong light upon the stage, while the glare of the lights themselves does not dazzle the spectators. The manager's offices, treasury, &c., are at the rear of the theatre, and have entrances from Pudsey-street.

ACCIDENTS.

At Peckover-walk, Bradford, a stonemasons' shed, under which fourteen or fifteen men were working, suddenly fell last week, crushing most of the men beneath it. One man was killed, four or five were severely injured, and the rest were slightly hurt. The framework of the shed was too weak for the heavy stone covers. The shed had been built by the workmen themselves. The witnesses were at some loss to assign any sufficient cause for the accident, but in the opinion of some among the jury, it had arisen in consequence of the rafters not having been firmly secured to the supports in the rear of the shed. A verdict of "Accidental death" was returned, but the contractor was cautioned by the coroner to take care that in future the erection of such structures was superintended by a competent person.

At Bradford, also, an inquest has been held on the body of a man who was killed at the works of Messrs. James Wilson & Son, joiners and builders, by the fall of a portion of the cornice of an engine chimney, then in the course of erection. The cornice, which had been moulded at a firebrick manufactory, and consisted of four courses, the upper and outer one containing twenty-four segments, weighing about 4 stones each, was being laid at the time of the accident. An examination of the chimney had been made by Mr. William Moulson, contractor, who stated that, in his opinion, if the first and second courses had been properly jointed with dowels, it would have been impossible for the cornice to have fallen. Mr. Robert Pollard, of Leeds, the contractor, who was on the summit of the chimney at the time the accident occurred, was not examined. The jury returned a verdict of "Accidental death," but added that, in their opinion, the contractor was not free from blame, and he was suitably admonished by the coroner. Mr. Pollard expressed his regret that the accident should have occurred, and his determination always to make use of dowels in similar work for the future.

At Derby a labourer had just taken his shift in a sewer, 13 ft. deep, that is being made from Osmaston-road to Normanton-road, when, through the sides of the sewer not being propped, a great quantity of earth fell, and buried him underneath. The men engaged on the job at once made every endeavour to rescue him; but, just when their efforts were being crowned with success, there was a second fall of earth, and then a third fall. It was two hours before the poor fellow was extricated, and life was then quite extinct. He was in the employ of Mr. Jackson, local board of health contractor.

A correspondent of the *New York Herald* gives an account of a terrible catastrophe that occurred in San Francisco on the morning of the 17th August. He says,—"A building known as the Summer-street House, in Summer-street, a few doors west of Montgomery, used as a boarding-house, fell to the ground about two o'clock in the morning, burying in the ruins nearly all the occupants. The exact number in the establishment at the time is not correctly known, but it is thought to be between thirty and forty. Already eight persons have been taken out dead, and fifteen to twenty wounded. The accident appears to have been caused by the following piece of gross carelessness: A cellar was being dug alongside the building, and those employed upon the work the day before went so deep as to undermine the east wall of the building to a degree that left it almost without support."

PROPOSED GOVERNMENT INQUIRY INTO THE CONDITION OF THE METROPOLIS.

It will be remembered that at the recent meeting of the Metropolitan Sanitary Association, a resolution was passed, urging the appointment of a Government Commission to inquire into the sanitary condition of the metropolis, with especial reference to the present attack of cholera, and that a deputation was named to see the Government on the matter. An appointment having been sought for that purpose, a letter has been received from Mr. Walpole, stating that the Committee of the House of Commons appointed to inquire into the Metropolitan Local Government is about to deal with the whole of the subject; and Mr. Walpole, therefore, "thinks that it would be superfluous, and, perhaps, disadvantageous, to recommend that a Royal Commission should be appointed to make a similar inquiry; and under these circumstances, he concludes the Association would not wish him to receive a deputation on the subject."

NEW WEST PIER AT BRIGHTON.

The new pier, built under the direction of Mr. E. Birch, C.E., was opened last Saturday. The capital raised for constructing the pier by the company was 25,000*l*., and the contract price was 21,890*l*. Messrs. R. Laidlaw & Son, of Glasgow, are the contractors, and it is stated that they will sustain a loss on their contract of from 10,000*l*. to 12,000*l*. The structure is 1,115 ft. in length, and extends into 8 ft. of water at low spring tides. The abutment or first portion of the structure in 290 ft. long and 140 ft. wide; the second portion, reaching to the head, is 560 ft. long and 55 ft. wide; and the head, or seaward end, is 310 ft. long and 140 ft. wide. The foundations consist of cast and wrought iron screws, fixed in the bed of the sea, and upon these are raised cast and wrought iron columns and piles, which sustain the whole superstructure. These columns and piles are braced and tied, to obtain the greatest amount of stiffness with least amount of resistance to the sea; and immediately upon them are placed the main wrought-iron girders and transverse wrought-iron girders, for the support of the roadway, which is of close planking, covered with a light coat of asphalte. On the top of the main girders, and along the entire length of the structure on either side, ample and continuous sea-accommodation for 2,000 to 3,000 persons is provided. The entrance to the pier from the Esplanade is 265 ft. wide, with ornamental gates and the necessary toll-houses, &c. The area of the abutment is 33,000 ft., and being of a higher elevation than the rest of the structure, the lower level is reached by a flight of easy steps 90 ft. in width, provision here being made for perambulators and Bath chairs, by an incline on either side of the roadway of the abutment. At the end of the abutment are erected two ornamental houses available for shelter; the area of the portion between the abutment and the head is 31,000 ft., and at its junction with the head occur two more ornamental houses. The head of the pier has an area of 39,000 ft. (making altogether over 100,000 superficial feet of promenade), and at its seaward end are placed two ornamental

houses. The main feature of the head, however, is the erection of ornamental weather-screens. These are so situated that promenaders can sit down sheltered from the wind in whatever quarter it may be, as the back of the seat is composed of glass, which gives the additional advantage of affording a view of the sea as well as what is doing on the extended area of the head. These screens are also roofed to protect visitors from the rains and the heat of the sun. Underneath the head of the pier convenient landing-places for steamers and boats, at all stages of the tide, have been provided, protected by fender piles of timber.

In addition to the "toll-houses" there are six octagonal-shaped erections, two of them,—those at the extremity,—being for ladies' and gentlemen's retiring-rooms. The two at the other corners of the head are for refreshment-rooms; and the other two nearest the shore for toy or fancy businesses. In each of these houses is a spiral staircase leading to the roof, from which a panoramic view of the town and coast can be obtained.

OPENING OF THE NEWS ROOM OF THE BRADFORD EXCHANGE.

The news-room of the Bradford Exchange, the only portion of the new exchange yet completed, was opened for business on Monday, the 1st of October. Its dimensions are 64 ft. in length by 27 ft. 6 in. in breadth, and 18 ft. in height. It is lighted by six two-light windows. The ceiling is divided into compartments, with elaborate enriched cornices, and with centre flowers. There are two Caen stone chimney-pieces with serpentine shafts and carved caps, executed by Messrs. Mawer & Ingle, of Leeds. The chandeliers are of Mediæval design, by Messrs. Skidmore. The decorations have been executed by Messrs. Briggs & Mansforth, and the fittings are executed in oak inlaid with ebony, by Messrs. Mills & Backhouse. Messrs. Lockwood & Mawson are the architects. The general building is approaching completion; and, with the exception of the "exchange-room," will probably be ready for occupation in about a month: the latter room, we understand, will have an encaustic tile floor, by Messrs. Maw, the laying of which will occupy at least two months.

PRIZES TO WORKMEN.

The Épinac Collieries Company have announced their intention of giving every year the sum of 2,000 francs as prizes for the best kept houses and gardens belonging to the men in their employ. The money is divided into six prizes—two of 500 francs and four of 250 francs each; and the awards are to be made on the 19th of August in each year, by a jury of colliers. The Company have already instituted ten prizes of 25 francs and 40 francs each for lads under 18 years of age who have distinguished themselves by their good conduct and attention to work.

BASINGSTOKE SANITARY IMPROVEMENT SAVINGS.

A meeting was held in the Corn Exchange in this town, on the 28th ult., to take into consideration the advisability, or otherwise, of adopting the Local Government Act, with an efficient and thorough system of drainage and waterworks, when one Mr. Blunden, an alderman, and who should be a chemist, the champion of non-drainage, argued it to be the healthiest town anywhere, because cholera had only appeared in one isolated instance, and that the rate of mortality would bear comparison with any town of the same size, if the years of fever epidemic were left out, which unfortunately occur about once in seven years, and are peculiarly fatal to children, many families losing two or three; also arguing the water as the purest, sparkling like champagne; but it is these ever-recurring epidemics, of preventible diseases, the friends of the poor and supporters of drainage have to deal with.

Mr. W. F. Smith, member of the town council, moved the inexpediency of taking any steps towards drainage for another year, in a very kind and feeling speech for the pockets of the poor ratepayers. This was seconded and carried with an uproarious majority.

Mr. C. Haslam proposed, and Mr. R. Wallis seconded, that a committee of burgesses should be formed to investigate the whole matter, as to the cost and carrying out of a proper and efficient system of sanitary improvement for the whole town. This was lost by a large majority, because the mayor could not promise the burgesses this inquiry should be conducted free of any cost to them.

One ratepayer named Webb, more fearful of his pocket than his children's health, said his partial-drained street was more unhealthy than the undrained one; he had *only lost a wife* and one child the eighteen years he had resided in the town.

Mr. Soper, a councillor, pointed out to him the probability of the gully grate and drain leading to his house being more the source of mischief than the undrained street, and said the corporation were the conservators of the public health. They were the jurists between the rich and the poor, and the present condition of the whole place,—open cesspools, ditches, and stagnant waters,—was a monument of disgrace to the town; mentioning as a fact that three principal streets were partially drained and emptied their contents of sewage into the head of a beautiful spring, thence to traverse again through the whole length of the lower part of the town, giving out all its poisonous exhalations to all the poorer inhabited district, many having no other water to use. One other drain went through the main thoroughfare to the railway, collecting matter from butchers' shambles and slaughter-houses, public yards, and W.C.s, and emptying its contents into one arm of the canal, almost in the centre of the town, the matter having so accumulated as to fill up this arm of the canal with thick sewage, so that it was with difficulty a barge could be drawn into it, and in hot weather the stench was most horrible. He maintained the case to be too flagrant with injustice to the poor to be suffered to remain a day.

The fact is, the town is divided between two powers,—the paving commissioners, who have no funds or the means of raising any; and the corporation, who are desirous of adopting the Act, but who are met with the whole force of this almost defunct commission and the holders of numerous hovels called cottages, who know, if the Act is once brought to bear, they must alter the present state of things. Eight resident doctors have thoroughly examined the town, in four sections, each section giving a separate report; and it is a fact, the evil is so glaring that the corporation are ashamed to print the report, or to read it to the meeting, only laying the same on the table. There are about 800 cesspools or open closets in the town, and these are interspersed with about the same number of wells, many not more than 6 ft. apart; and yet this is pronounced by this meeting to be a very satisfactory state of things, and money is more dear to them than improvements for the health and social condition of the inhabitants. Such a state of things needs interference.

WATERING-PLACE BALCONIES.

An inquest has been held at the Sussex County Hospital, touching the death of a servant, who had died from injuries received by the fall of a balcony. Deceased was servant at No. 30, Cannon-place, Brighton, and on the 29th ult., while shaking a rug from the balcony in front of the drawing-room floor, the part she was standing on completely broke away from the remainder, and she fell with it into the area, a depth of nearly 30 ft. One of her thighs was fractured, and the other injuries she received brought on pneumonia, from which she died at the hospital. The occupier of the house had called the attention of a man named Attree, a painter, who did the repairs for the landlord, to the unsafe state of the balcony. Three years ago it was repaired, but the old woodwork was put back, and the tenant had it further strengthened. Three months ago the tenant complained of the unsafe state of the balcony, and the landlord (Mr. Tamplin) and Attree tested it by going on it with two other persons, but they found "no vibration whatever." This year he had painted the balcony, and then did not notice anything wrong with it: it "seemed all right." In answer to the coroner, a servant next door, who saw the deceased fall, said the flooring of the balcony was so rotten that it crumbled under the touch. The jury returned a verdict of "accidental death," adding "that Henry Pagden Tamplin (the landlord) and Charles Attree (his workman) were both and each of them negligent—though not to an extent to make them criminally responsible—in not looking to the safety of the said balcony." One of the jury observed that every householder ought to have a practical surveyor to examine and testify to the substantial condition of the balconies. Visitors would do well to demand such a certificate before trusting the lives of themselves and families to these erections.

METROPOLITAN BOARD OF WORKS.

A meeting of the board was held last week, for the purpose of opening tenders by parties who should be willing to contract for the construction of an arched viaduct, with paved roadway thereon, 885½ ft. in length, or thereabouts, with other works in connexion therewith, comprising a similar length of subway, partly of iron and partly of masonry and brickwork, situated upon the foreshore of the river Thames, between the eastern end of the Inner Temple and Blackfriars Bridge. The chairman announced that he had received seven tenders, which he proceeded to read, as follows:—Messrs. Hill & Kiddle, 302,000*l.*; Mr. Thomas Pearson, 265,000*l.*; Messrs. Hitchcock & Williams, 344,700*l.*; Messrs. Brassey & Co., 305,000*l.*; Mr. A. W. Ritson, 239,000*l.*; Mr. Joseph Thackeray, 320,000*l.*; and Mr. William Webster, 268,000*l.*

QUANTITIES AND QUANTITY SURVEYORS.

Sir,—It must have been observed with satisfaction by all who regard an unsatisfactory subject with unsatisfactory views, that you have latterly twice indicated your intention of noticing the salient question of "quantities and quantity surveyors,"—*i.e.*, those who estimate the mechanical and fine-art work of edifices.

How many of this singular calling could take an ordinary degree in mathematics, or pass an easy examination in fine art, may be fit subjects for inquiry when the more important matters indicated below have been fully explained. You remark, sir, that "the question of quantities and quantity surveyors is becoming a serious one." It may become more serious unless some quantity surveyor can anticipate your animadversions on a system of sometimes increasing the cost of building ten to thirty or more per cent., by stating:—

1. The tender being based on the bills of quantities, and the contract on the drawings and specification, what is the legal link between the sets?

2. Suppose the quantities are excessive or deficient, where is the equity of the system towards the client, seeing that, on the one hand, deficient quantities will probably be discovered by the contractor; and, on the other hand, excessive quantities will probably not be discovered by the client.

3. What is the meaning of the builder, instead of the client, paying the quantity surveyor, adding the sum to the estimate? Is this method as fairly in the interest of the client as in that of the builder?

4. Is it true or untrue that some surveyors give "full" quantities, and are favourites with builders, while other surveyors get little to do, because, being strictly accurate, builders refuse their quantities, on the pretence that they are unknown or unqualified?

5. The quantity surveyor being liable for deficiencies, what is the check on his not unduly protecting himself in this respect?

It is clear that satisfactory answers to these plain questions are in the interest of clients, architects, builders, and all honourable quantity surveyors. The last may possibly deny their system *increases* the cost of building; but they can scarcely contend it does not sometimes *obscure* the cost, after the wondrous tenders, differing by about one-half, which cannot always be imputed to faults in builders, and in respect of which there should be neither false delicacy nor ambiguity.

Edward L. Tarbuck.

P.S.—Probably some of your readers may be able to explain the systems adopted on the Continent and in America.

THE EARLY CELTIC CHURCH.

Sir,—The Early Celtic Church is a subject on which much has been written, though it is to be regretted that it has been made a field for ecclesiastical dispute rather than archæological investigation.

Permit me to notice shortly one or two points in your review of Mr. Buckler's work which seem to call for remark.

That the Druids were favourable to the introduction of Christianity, as you suggest, is scarcely to be maintained in face of the uniform evidence of Adomnan, Bede, the Irish Chronicles, &c., who all represent Columbas as constantly disputing with and confounding the Druids by prayer, miracle, or stratagem.

That he so easily obtained possession of their chief seat in Iona can be better understood if we remember that the brethren came in the train of the conquering Dalriad chiefs, with whom his high birth and sacred profession made St. Columba perhaps the most powerful man of the tribe. That he should have selected an island seems natural. The Druids as well as the Christian brotherhood found it necessary for their safety that they should be removed some distance from the mainland, where constant warfare would lead to constant depredations. Similar reasons, no doubt, led the pioneers of our religion in Britain to seek such retreats as St. Serfs Isle Lochleven, Inch Colm in the Firth of Forth, Holy Island, Isle of Man, Anglesey, &c.

Another reason for the choice of this particular island may be found in the uniform practice of the Early Church in their conversion of the heathen. The principle was to guide rather than confute;—to adopt such circumstances of the ancient religion as could be changed or assimilated to the new faith. St. Paul's happy reference to the "unknown God" whom the Athenians "ignorantly worshipped" is an early example. Nothing would, therefore, appear more suitable than to occupy the island rendered sacred by the ignorant worship of the Druids, and to dedicate it to the worship of "God made manifest."

As to the materials used in the building of the earliest Celtic churches, it appears that these were wattles or wood, till the influence of the semi-Roman College of Whitherne introduced amongst them the "Roman manner." The church of Whitherne, founded by St. Ninian, was

undoubtedly of stone, and in its erection the brethren may have been assisted by the Roman legions who then occupied Valentia, and had been engaged in the erection of frontier walls and other large works. The church or college founded at Abernethy in 455 was of wood; but in 711 builders were sent from Jarrow to build a church of stone in "the Roman manner." It is not improbable that to this latter date we may assign the round tower there remaining. No such tower is to be found at the previous settlement in Iona; but in the subsequent foundation of Brechin and St. Andrew's we find similar round towers were erected. That at Brechin remains, and the square Norman tower of the church of St. Regulus. St. Andrew's, from its unusual proportions, was doubtless built to replace a more ancient round tower. There are few well-authenticated remains of Celtic masonry; but Wilson, in his "Prehistoric Annals of Scotland," refers to a very interesting example recently discovered on Inch Colm, close to the remains of the beautiful priory.

I have made these remarks principally with a view to induce some of your readers who have interested themselves in this subject to communicate the results of their researches, and to provoke such discussion as may illustrate the interesting but rather obscure province of primitive architecture. COLUMBA.

"A POST-MORTAR INQUIRY."

UNDER this head we have a letter in the last number of the *Builder*, wherein the writer very justly calls "the modern compound termed mortar a mockery and delusion."

This could not be said of a mortar known to the ancient builders composed of lime, sand, and pulverised bricks. I have found this compound in many ancient buildings that have stood for ages.

The boundary-wall of Pevensey Castle, in Sussex, was built of a mortar composed of the same materials, and it is almost impossible to separate the masses of masonry that have fallen.

The aqueduct of Nismes, built by the Romans, was coated on the inside with a mortar composed of the same materials, and it is now equal to the hardest stone, after its exposure to the action of water and the atmosphere for over sixteen centuries.

The round towers of Ireland that have stood over 3,000 years, and are likely to stand as many more, were built of similar materials, and some of them were built of a concrete or artificial substance resembling bricks, and their cohesiveness may be estimated from the fact that in the year 1786-7 a powder-mill exploded within 24 ft. of the base of the Clondalkin Tower, when it firmly stood its ground, though every other structure within the influence was shivered to annihilation, and extended its violence so far as to shatter the windows in some of the streets of Dublin.

It would be doing good service if you, or some of your numerous readers, would favour us with a paper on this subject, giving the analysis of these ancient mortars, and how we should be able to make a similar mortar that will not crumble to dust in a few years. T. H. L.

PROVINCIAL NEWS.

Bisley.—Among very many recent improvements in the ancient town of Bisley is the erection of a court-house, for the use of the public, for meetings, lectures, concerts, &c., by Mr. J. E. Dorington, the lord of the manor. This building has been formally inaugurated.

Coventry.—The top stone of the Leigh Mills, Coventry, has been laid by Lord Leigh, with Masonic honours, in the presence of a large assembly. The site of the new building lies at the top of Hill-street, and is immediately connected with the buildings of the old Worsted and Woollen Company, which have not been occupied for some time past, but have lately been purchased by the proprietors of the Leigh Mills, and amalgamated into one establishment. The dimensions of the building will be 203 ft. in length and 112 ft. in breadth, and the estimated cost is 4,500*l*. The building is of brick. The builder is Mr. Marriott, of Coventry, and the architects are Messrs. Lockwood & Mawson, of Bradford.

CHURCH-BUILDING NEWS.

Norwich.—St. John's Sepulchre Church has been re-opened. Internally, the old pews have been superseded by deal benches, and the galleries at the west end, and at the north transept, have been removed. Two new windows have been inserted, and four others have been reglazed with cathedral glass. A plain oak pulpit has been supplied, and the organ has been removed from the west end to the south transept. The chancel fittings are of oak; the open communion rail is of the same material and new, with the chairs and fauld-stools. A vestry-room has been appended to the south side of the chancel. The tower is now thrown open, and the new window, with its insertion, adds to the appearance of the church. Externally, some of the buttresses have been rebuilt, a new doorway made to the north transept, and the coping repaired. The contract was carried out by Mr. Wright, of Lakenham. The total cost is between 400*l*. and 500*l*. Connected with the restoration was the discovery of a rood-screen, the panels of which, though the prominent mouldings are somewhat mutilated, retain their paintings in a tolerable state of preservation. The saints represented are St. Jerome, wearing a cardinal's hat, and holding an open book; St. Blase, habited in pontificals, holding his pastoral staff in his left hand, and his distinguishing emblem—an iron comb—in his right hand; St. Ursula, crowned to show her royal descent, and holding an arrow; St. George, wearing a plumed turban, and a mantle over his plate armour; St. Etheldreda, represented as an abbess crowned, and with her pastoral staff in her right hand; St. Gregory, habited in alb, tunicle, dalmatic and chasuble, pall, and cope. A piscina was also found during the restoration, and some years since a consecration cross was discovered.

Wansford.—The foundation-stone of a new church at the little village of Wansford, on the banks of the Driffield canal, and about three miles distant from that town, has been laid by Sir Tatton Sykes, bart., of Sledmere. The entire cost of the church, which will have a burial-ground attached, will be defrayed by Sir Tatton. The site selected is that on which the old chapel stood some 400 years ago, and it is intended to dedicate it to St. Mary the Virgin, after the name of one of the patron saints of the same ancient edifice. It will stand near a school, erected a few years ago by the present donor of the church. The architect is Mr. G. E. Street, of London; and Mr. James Kirby, of Scarborough, is contractor of the works; Mr. Thomas Cloutman, clerk of the works; and Mr. G. Wells, of Scarborough, master mason.

Melton.—The foundation stone of a new church at Melton, has been laid. Mr. F. Barnes, of Ipswich, prepared the designs. The church will be in the transition style from Early English to Decorated architecture, and will be built of Kentish rag with Caen stone dressings. There will be a tower with a spire of Caen stone. The sitting accommodation will be about 400. The total cost will be somewhere about 3,500*l*., the contract (taken by Mr. Henry Luff, Ipswich), being about 3,000*l*.

Mendlesham.—The church here has been reopened after partial restoration. The recent alterations were confined to the interior. Formerly, some oak benches, with a good deal of carving about them, were covered up by pews. The latter have been removed, and the former revert to their original position. New benches, of plain and stained deal, have been added. The walls were replastered. Next the roof was found to be in a dangerous state, and then it was decided to have an entirely new roof for the nave. Those of the aisles remain as they were, with their primitive struts and rafters, ill-consorting with the appearance of the rest of the church. All the roofs are open. There are six Norman arches on either side of the nave, and these have been rubbed up, and the font has been refaced. The western gallery has been removed, and by means of the western arch the tower (which contains five bells), is laid open to the nave, and this, with lowering the west entrance door nearly 2 feet, is one of the principal alterations. Nearly the whole building has been new floored. An oak screen, with some of the old tracery taken from some of the old benches laid in the panels, forms a vestry at the east end of the south aisle. The pulpit has been lowered. It now stands upon a stone base, and is approached by a short flight of stone steps. The reading-desk and lectern for the most part are new and of oak. The organ, formerly in the west gallery, now stands at the bottom of the south aisle next to the chancel, which was repaired some time ago by Mr. Rednall, of Stowmarket. The designs for the alterations were by Mr. Christian, architect, London; Mr. F. Betts, Stowmarket, was the builder; and the cost of the work is upwards of 1,000*l*. In cleaning the walls, a recessed monumental tablet was discovered in the east window of the north aisle. Years ago this was blocked up by some parochial bricklayer.

Tur Langton.—The new chapel of ease of St. Andrew's, Tur Langton, has been consecrated and opened. Formerly the religious services of the villagers were celebrated in an old chapel at the west end of the village, but that had become so dilapidated that it was no longer considered safe to assemble a congregation within its walls. The ground upon which the new edifice has been erected was given by Sir C. Isham, bart. The style of the church is Early English. The edifice consists of a nave, aisle, chancel, transept, and vestry, a tower, and spire. The nave is 60 ft. in length, and 21 ft. in width; the aisle is 47 ft. in length, and 11 ft. in width; and the chancel is 21 ft. in width, the same as the nave, and 33 ft. in length. The transept and aisle are on the north, and the vestry is on the south side. The church is built of pressed bricks, relieved by coloured bands and patterns, and is lighted with pointed windows of plate tracery in Box Bath stone. There are five windows on the south side. The west window is a very lofty one, with three lights. The roofs of the nave and chancel are open and high pitched, and are supported by principals, stained and varnished. The principal entrance to the church is on the north side of the tower, and consists of a stone arch, carried by six columns with red stone shafts. In addition to this entrance there is also a priest's door on the north side of the chancel. The tower and spire are about 115 ft. in height. The chancel is terminated by an apse, lighted by five lancet lights, three of which are filled with stained glass, supplied by Messrs. Heaton, Butler, & Bayne. The north side window has a figure of the Good Samaritan. The window on the south side exhibits the Prodigal Son. The centre light is emblematical of Christ blessing little children. The church is seated with open benches of red deal, stained and varnished. The stalls of the chancel are stained with a lighter varnish. The fronts are filled with carved work. The pulpit is octagonal in shape, and carved, and is placed on the south side of the nave. The woodwork of the church was done by Mr. John Loveday, of Kibworth. The contract for the brick and stone work, slating, &c. has been carried out by Mr. G. J. Fox, of Atherstone; the plumbing and glazing by Mr. Hill, of Leicester; and the staining, &c., by Mr. C. Bryant, of Kibworth. The chancel-floor is laid with encaustic tiles from the establishment of Mr. Whetstone, Coalville. The altar-rails are of oak, supported by ornamented wrought-iron standards, by Mr. Stone, of Leicester, who has executed the whole of the ironwork. We should have stated that the walls inside are faced with pressed red bricks. The building is heated by Porrit's apparatus. Messrs. Goddard & Son, of Leicester, were the architects, and Mr. W. Clifton, of Leicester, clerk of the works.

Books Received.

Sanitary Measures, and their Results in Exeter. By THOMAS SHAPTER, M.D. Second edition. Exeter: Clifford, High-street.

IN 1832 the virulent cholera was solely predominant and fatal in those districts of the city of Exeter whose sanitary state was eminently imperfect; and, after the subsidence of cholera, a new supply of water and other sanitary improvements were effected, and a general sanitary supervision was established. The result, on the recurrence of cholera in 1849, is thus summarized by Mr. Shapter, who is the senior physician to the Devon and Exeter and other hospitals:—

"The total deaths from cholera in Exeter in the two epidemics of 1832 and 1849 amounted to 445; of these 402, or 90 per cent. took place, with the concomitants of bad drainage and a deficient water supply; while with, in great measure, an absence of these conditions, the complementary number of 43, or 10 per cent., only occurred. Can any more convincing statement be offered of the beneficial influence of sanitary improvements?"

A similar lesson is confidently anticipated by the author in 1866.

The chief portion of the pamphlet treats of cholera in its medical aspects.

Miscellanea.

Railway and Omnibus Revenues.—The traffic receipts of railways in the United Kingdom amounted for the week ending the 22nd of September, on 12,624 miles, to 756,614*l.*, and for the corresponding week of 1865, on 12,408 miles, to 742,189*l.*; showing an increase of 216 miles, and of 14,425*l.* The yearly revenue produced by the railways of the United Kingdom is nearly 50,000,000*l.* The yearly revenue of the London General Omnibus Company is about 500,000*l.*

Archæological Excursions.—The members of the Norfolk and Norwich Archæological Society have had an excursion through the Depwade Hundred. The programme commenced with Tasburgh Church and Roman Camp, where the party, numbering about sixty, met. Here the Rev. C. R. Manning made a few observations on the church. The following places were afterwards visited, namely, Stratton St. Michael, Fritton, Skelton, Hardwicke, Long Stratton, Aslacten, Forncett St. Peter, where the rector read a paper, and Forncett St. Mary.——The members and friends of the Suffolk Institute of Archæology have held a meeting at Thetford, and made excursions thence to various places of interest in the neighbourhood. Lord A. Hervey, the president, was with the party.

The New Street from Blackfriars to the Mansion House.—In the Common Council in reply to questions put by Mr. Alderman Lawrence, M.P., Mr. H. Lowman Taylor, one of the representatives of the City at the Metropolitan Board, said he could inform the court that 235 claims for compensation for property that had been taken were finally settled, and that 111 freehold and leasehold claims were still under consideration. He believed that the Board had resolved not to pull down the property in small patches, but to wait until they could clear a considerable space of ground, and thus afford an opportunity for erecting large buildings such as were intended to be built in the street. By the beginning of next year the works would be commenced. It was a prophecy that he would not venture on, to state the period when the street would be thrown open.

The Bath Stone Company (Limited). — An ordinary general meeting of this company has been held. The chair was taken by Capt. Brickman. The second half-yearly report says:—"The directors congratulate the shareholders upon the steady progress of the Company, and the position it is acquiring in the trade. At the date of the half-yearly meeting in March last the arrangements of the Company were completed, but the actual working of the quarries had scarcely commenced. The Box Ground stone quarry and the Corsham Down quarry are now well opened, and the stone in these quarries is turning out satisfactorily. By arrangements made upon the retirement of Messrs. Myers & Sons from their quarry business, the directors have acquired quarries and plant at Box Hill, Kingsdown, and Pickwick, upon very advantageous terms. The Company now have seven cranes at work in their various quarries. Some trade has been profitably done in buying stone for re-sale."

Desiccation of Crops.—Mr. Nicholson, a Nottingham land agent, makes a suggestion. Why not (he asks) dry your corn by sending through it currents of hot air of a temperature ranging from 100 degrees to 120 degrees? Timber, paper-hangings, &c., are often dried in this way. From 10 to 15 per cent. of water can be taken out of wood by driving hot air through it at a hurricane rate, say 45 miles an hour. Corn can be thus treated without injury to its germinating power. Mr. Nicholson has proved this by experiment. The effect of the hot currents is very different from that of the dormant heat of a kiln: it only hardens the outer surface, rendering the grain less likely to reimbibe moisture. The corn can thus be dried on wire kilns if the air is set in motion. If we mistake not, some such process was suggested in the *Builder*, and has long been in use in Russia. To Mr. Nicholson's suggestion we may add another. Why not cut off the heads of corn in wet seasons, and dry or desiccate them alone, where there is want of space or time for drying the whole crop? Much rather save the valuable grain than lose both grain and straw. Besides, the straw will not spoil by sprouting as the grain will in wet seasons.

A new "Pacificator."—A man of the name of Perrot offers, with a new machine which he has invented, which is moved by steam and exploded with gas, to kill at the rate of 60,000 men per day of twelve hours.

A Village Hospital.—Lord Chesham has just presented to the Nuisance Removal Committee at Chesham a site of ground whereon to build a cottage hospital for the reception of patients belonging to the labouring classes, and his lordship has also supplemented his gift by a donation of 200*l.*

Newspaper Press Fund. — At a numerous meeting of the executive, held at the offices, 24, Cecil-street, Strand, on Wednesday last, Mr. T. H. Taunton, graduate of Oriel College, Oxon, secretary to Lord Wharton's Charity, and late assistant-secretary to the Royal Provident and Benevolent Institution, was unanimously elected secretary to the fund. There were more than fifty candidates for the office. Mr. J. A. Froude, M.A., Mr. Theodore Martin, Mr. David Keane, Q.C., Mr. S. C. Hall, and other vice-presidents were present.

Bursting of a Large Water-tank.—Messrs. Bass & Co. recently erected on their premises at Derby a new water-tank, at a cost of several thousand pounds. A few days ago, shortly after the men employed in the tank had finished their day's work and retired to their homes, the basin, containing upwards of 100 tons of water, in the upper story, burst, precipitating the whole upon the under-story basin, and so on, with increased violence, to the bottom, or first story. Thus upwards of 400 tons of water rushed out, carrying with it strong beams, solid ironwork, and masonry. The interior of the building is a complete wreck.

Proposed Scheme for securing Hampstead Heath to the Public. — At the Marylebone vestry, a communication from St. Pancras was read on the subject of securing Hampstead Heath and adjoining lands for the public benefit, and suggesting that negotiations should be entered into before the next session of Parliament by the Metropolitan Board of Works with Sir Thomas Maryon Wilson, bart., and also soliciting the appointment of members from the Marylebone vestry to co-operate with them in taking energetic measures for the purpose. Seven delegates were appointed to co-operate with the vestry of St. Pancras in the matter.

Liverpool Architectural Society.—The first meeting of the session has been held at the Royal Institution, Colquitt-street. Mr. T. J. Kilpin presided. The president alluded at considerable length to the late Mr. Stubbs, president of the society up to the time of his death. Mr. Boult gave notice that at the next meeting of the society he would move the following resolution:—"That, in the opinion of this meeting, the position selected for the equestrian statue of his late Royal Highness the Prince Consort is eminently unsuitable, as its close proximity to St. George's Hall is extremely prejudicial to the effect of both works of art; that this meeting hopes the subject may be reconsidered by the town council, and that the statue may be speedily removed to a more eligible situation—one in which the excellences of the sculptor's achievement may be more advantageously displayed without occasioning any injurious competition."

Drapers' Hall, London.—A considerable portion of the premises belonging to the Drapers' Company, in Throgmorton-street, is being pulled down, for the purpose of erecting new reception-rooms on the west side of the old quadrangle, in place of the picture-gallery, which, on account of its narrowness, was found to be inconvenient. According to the *City Press*, it is proposed to form a handsome staircase of approach to the new drawing-room on the site of the clerk's house, in Throgmorton-street, which affords the opportunity of a suite of rooms from Throgmorton-street to the garden, a length of nearly 170 ft., and of proportionate width and height. The quadrangle is to be preserved. It is proposed to build a new façade towards Throgmorton-street, of Portland stone, of a Palladian character. The present contract, of 28,000*l.* has been taken by Messrs. Barnsley & Sons, of Birmingham. It is probable that, after the present works are completed, the dining-hall on the east side of the quadrangle may be rebuilt, of a size more suitable than the present hall to the number of the Livery. The designs are by the architect of the company, Mr. Herbert Williams.

Explosion at the Main Drainage Works, Clapham.—A serious explosion has taken place at the main drainage works in course of construction in the Park-road, Clapham, whereby three men employed in forming the sewer have been seriously injured. It appears that a number of workmen were engaged in excavating at a considerable depth from the surface by the aid of a lighted candle, when from some cause at present unexplained, but supposed to be an escape of gas, an explosion, which was heard for a considerable distance, took place.

New Market and Street Improvements for Bethnal-green.—Among the local Acts of the late Session was one for the establishment and regulation of a market near Columbia-square, Bethnal-green, and for the opening of a new street and the improvement of other streets. It recites that the market would be of public benefit to the labouring classes, and that Miss Burdett Coutts was willing to undertake the same with the land she possessed, and to purchase other land for the purpose. The Legislature has conferred by the Act the necessary provisions on that lady to establish the market, and to continue the same to her assigns, so that it should remain a public market.

Consecration of a Capuchin Church at Peckham.—On the "Feast of St. Francis," the Capuchins stationed at Peckham opened their new church, from the design of Mr. Welby Pugin, which has been erected in the Lower Park-road. The church consists of a nave and chancel, but under a continuous roof, north and south aisles, chapels of "Our Lady" and St. Francis. The chancel is marked by two gables, which rise from the nave walls above the aisle roofs, each gable being perforated by a rose window. Large rose windows also pierce the eastern gables of the nave, as well as the eastern wall of the "Lodge" chapel. The aisle windows are arcaded in single lights the height of the church, although it has no clerestory. There is a Calvary, painted in natural colours, over the altar, but this is only temporary. The altars of the chapels are of Irish marbles, and were worked in Ireland.

The Iron Trade.—According to the *Iron Trade Circular*, the trade is torpid; the same inaction which pervades the Continental markets being visible throughout all those of this country. The range of prices is tending downwards in every direction. Prices are quoted as follows, at works, unless when otherwise specially mentioned:—Manufactured iron — South Staffordshire: Prices unaltered; marked bars, 8*l.* 10s.; sheets, singles, 10*l.*; doubles, 11*l.* 10s.; angles, 7*l.* 15s. to 9*l.*; gas strips, 8*l.* to 8*l.* 10s. The commoner makes of our district in bars are being quoted at 7*l.* 5s. to 7*l.* 15s. at works; puddled bars, 6*l.* 2s. 6d. to 6*l.* 7s. 6d.; scrap bars, 6*l.* 10s. to 7*l.*, according to quality. North Staffordshire: Bars, 7*l.* 10s. to 7*l.* 12s. 6d., delivered into this district, Liverpool and Manchester; best, 8*l.* to 8*l.* 2s. 6d.; best best, 8*l.* 10s. to 8*l.* 12s. 6d.; best angle iron, 8*l.* to 8*l.* 2s. 6d.; best T iron, 9*l.* 2s. 6d. to 9*l.* 5s.; bridge and tram rails, 8*l.* 5s. to 8*l.* 10s.; best plates, 9*l.* 5s. to 9*l.* 10s.; best boiler plates, 9*l.* 5s.; best sheets, 9*l.* 10s.; best hoops, to ordinary gauge, 9*l.*; rivet iron, 9*l.* 5s. to 9*l.* 10s.; puddled bars, 2 in. to 6 in., 6*l.* 5s. to 6*l.* 7s. 6d.; 11 in. to 15 in., 6*l.* 7s. 6d. to 6*l.* 10s.

Panic at Tottenham Court Road Chapel.—On Sunday night last a panic was created in Tottenham-court-road Chapel, under the following circumstances:—The Rev. J. W. Boulding was preaching to a congregation of about 2,000 persons, and had proceeded some little way with his sermon, when the chapel-keeper, according to his usual custom, proceeded to lower the centre gaslight. In endeavouring to turn the gas as low as possible, he completely extinguished the majority of the burners. Some, however, were still alight, and an escape of gas from the others became the consequence. The smell in some parts of the chapel was so bad that numerous persons quitted their seats. The burners which had remained alight having also been extinguished by the gas being completely turned off at that particular main, other lights, supplied from a second main, were still burning. By this time, however, a cry of "Fire" had been raised; shrieks of alarm resounded from all sides; and a large proportion of the congregation were seized with panic. In the crushing several persons fainted, but no serious accident occurred. Order, however, was restored, and the service was continued as usual.

Manchester Exchange Competition.—More than fifty sets of designs for the proposed exchange have been sent in, and are now being hung for examination.

Gas.—The Folkestone Gas and Coke Company have declared a dividend of 3 per cent. on the profits of the half-year, which, with 5 per cent. declared at the last half-yearly meeting, will be at the rate of 8 per cent. per annum.——The Dewsbury and Batley Gas Company have declared a dividend of 10 per cent. per annum on old shares, and 7½ per cent. on new shares, and carried a balance of 781*l.* 15*s.* to their reserve fund.

Prizes in Archæology offered by the French Government.—A prize of the value of 60*l.*, or two or more making together an equal amount, is offered for the best work or works on Archæology, published in the memoirs of the learned societies of the departments or sent direct to the Minister. A prize of the same amount is offered to the society that shall furnish the best memoir on the following subject:—Indications respecting the Commerce and Industry of the Middle Ages, derived from authentic documents, referring either to a province or to a town, with special reference to the practices and rules of trades; the condition of workmen, employers, and dealers, &c.

New Congregational Church, Upper Holloway.—The memorial stone of a new Congregational Church has been laid in the Junction-road, Upper Holloway. The edifice will be erected from the designs of Mr. W. F. Poulton, of Reading. It will be in the Decorated style, with adaptations for the purposes of Congregational worship. Accommodation will, for the present, be provided for about 700 persons; and provision has been made for the erection of galleries, whenever necessary, by which some 250 extra sittings will be obtained. The basement will afford space for a large Sunday school, a lecture-room, and class-rooms. The total cost, including the purchase of the freehold, is estimated at 7,400*l.* The present contract has been taken by Mr. Sawyer, of Dulwich, for 4,716*l.*

Another New Motive Power.—B. J. B. asserts that he has discovered an "extraordinary method of producing motive power capable of doing all that steam-power can do, entirely free from danger or the fear of it: neither fire nor water is required; it occupies but little space, and requires very little attendance; feeds itself, and continues in powerful action at less than one-twentieth part of the cost of steam-power. In short, a better substitute for the costly murdering steam-power cannot be reasonably desired. When the power of capital can be brought to act with mechanical knowledge and skill, the destruction of coal to produce motive power will cease, self-interest will put an end to it." We have been told the same thing so often before, that we must ask for evidence before we give more space to the statement.

Building Bye-laws for Shrewsbury.—The following memorial from the architects and builders of Shrewsbury has been presented to the Town Council:—Resolved: "That, in the opinion of this meeting, the time chosen by the Corporation for the framing of bye-laws affecting the formation of sewers, drains, water-closets, cesspools, and other matters which are tolerated therein, is most inopportune, inasmuch as no general system of sewerage exists in the borough, and would entail unnecessary expense and vexation to the building trade and their employers; and that the subject of the consideration of bye-laws affecting their interests ought in all fairness and equity to be postponed until the laws providing for the main sewerage of the town have been carried out. That even if measures so strong and coercive in character were considered necessary by the Corporation, this meeting would respectfully suggest to the Corporation that they should contain specific and definite regulations with respect to the supervision of buildings, the classification of houses, the height of the various stories, and the consequent thickness of walls, the mode and materials of construction, provisions for the alterations and additions to old buildings, rebuilding of old structures, the division of old buildings separated by irregular partitions, recesses, and opening timber in external walls, party walls, construction of roofs, rules as to chimneys and flues, fire-pipes, habitable rooms, arches, projections, limitation of areas, open spaces near dwelling-houses, and the construction of public buildings."

Miles of Burning Trees.—One of the largest pine forests in Corsica has been burning for a week. Millions of trees, it is said, have been destroyed, and the resinous nature of the wood seems to defy all attempts to put out the fire.

A Great Engineering Work.—A gigantic work is on the *tapis*, nothing less than the drying-up of a great part of the Zuyder Zee, of bacchanalian celebrity. The extent of the land proposed to be reclaimed is 380,000 acres, and the cost of the work is set down at 10,650,000*l.* Were it beer, perhaps the German topers could do it at a cheaper rate.

The Metropolis Water Supply.—A conference of members of the various metropolitan vestries has been held in the Vestry-hall, Upper-street, Islington, to consider what means should be adopted to procure for the population of London a constant supply of water. Mr. Harvey presided, and the following resolutions were passed:—"That Mr. Hankey, M.P., be informed of the resolutions passed at the former and to-day's meetings."—"That it be referred to the various vestries and district boards to empower this committee to prepare a Bill and give the necessary legal notices with a view to obtaining an Act of Parliament requiring a constant supply of water to the metropolis and its environs;" and "That a memorial to the Secretary of State be prepared and signed by the chairman of this meeting, urging upon him the necessity of removing the difficulties at present existing, owing to the provisions of the Water Companies' Acts in obtaining a constant supply of water; and that a deputation be appointed to present the same, and support the views of the memorialists."

Ecclesiastical Demolitions.—The first union of City parishes, under the Bishop of London's Act of 1860, is just about to take place. The parishes to be amalgamated are those of St. Benet, Gracechurch-street; St. Leonard, Eastcheap; and Allhallows, Lombard-street. St. Benet's Church, at the corner of Fenchurch and Gracechurch streets, is to be pulled down. The church of the three united parishes is now to be Allhallows, Lombard-street. From the proceeds of the sale of the site a new church and district are to be formed in Stepney. 1,500*l.* are to be devoted to building a home for the rector of the united parishes, and 4,000*l.* to repairing and re-pewing Allhallows. The site of St. Benet's Church is generally contended to be worth from 40,000*l.* to 50,000*l.*, standing as it does in the centre of the City. For a small piece of ground the Commissioners of Sewers have agreed to pay to the Ecclesiastical Commissioners 3,000*l.*, in order to slightly widen the entrance to Fenchurch-street.——The site of the Congregational Chapel, New-court, Carey-street, having been taken by the commissioners for the New Law Courts, this place of worship finally closes after the services next Sunday.

Sulphurous Acid Gas as a Disinfectant.—We have occasionally recommended burning sulphur, or sulphurous acid, as a disinfectant of old standing and established utility. This is the substance which our own and other governments long used in quarantine fumigations, if it be not in very general use for such purposes even yet in various countries. Dr. Dewar, of Fifeshire, in Scotland (where, by the bye, there is or was a quarantine establishment in the vicinity of Inverkeithing), strongly recommends its use in cattle-plague, and states that the treatment led to results of unexpected importance. Dr. Dewar's cows were fumigated four times a day for four months; and he, as well as some of his neighbours, discovered that the animals enjoyed the treatment, so much so that it has been continued, irrespective of the disease; and they consider it to be demonstrated, that exposure to the fumes of sulphur is highly beneficial to cattle at any time, by reason of its recognised tonic attributes and its disinfecting properties. It appears also to be a specific against other diseases to which cattle, and horses as well, are liable. But the most striking results were that the men who attended to the fumigations ceased to be troubled with various ailments. A groom, far gone with consumption, and who had more than once been reported as dead, having made an effort to superintend a course of fumigations, found himself surprisingly relieved within one week; and within two months he gained two stone in weight, and was fit for any ordinary stable-work. Similar beneficial results, Dr. Dewar adds, have been produced in others afflicted with chronic phthisis, and diphtheria has been stayed.

Dwellings for Working Classes in Liverpool.—At the meeting of the Liverpool town council on Wednesday, the Health Committee applied for permission to borrow from the Public Loan Commissioners a sum of 13,000*l.* to be spent in erecting dwellings for the working classes. In the course of a discussion which this proposal evoked, it was stated that the main cause of the unhealthiness of Liverpool was overcrowding, many districts being far more densely populated than any other town in the kingdom, not excepting the east end of London. In one district, where there had been an increase of 7,800 persons, only ten additional houses had been built—the demolitions under the Sanitary Acts being 114, and the new houses only 124. The proposed dwellings, so far as mere cost was concerned, would be built as cheaply and plainly as possible, in order to set an example which private builders might be induced to imitate. The recommendation was agreed to.

TENDERS

For the erection of schools and class-rooms at Lower Norwood. Fittings not included. W. H. Rawling & Sons, architects. Quantities supplied:—

Cooper	£387 0 0
Palmer	380 17 0
Wilkinson	375 0 0
Dover	354 8 0
Harris	325 0 0
Gibbs (accepted)	310 0 0

For the erection of a house and shop, for Mr. Ralph Bower, in Oldham-street, Manchester. Mr. Herbert E. Tijou, architect:—

Neill & Sons	£1,090 0 0
Cochran & Co.	1,041 0 0
Clay	1,038 0 0
Thompson	985 0 0
Harrison & Shaw (accepted)	948 0 0

For the erection of a new station, at De Beauvoir Town, for the North London Railway Company:—

Rigby	£17,895 0 0
Myers & Son	17,380 0 0
Sims & Marten	17,278 0 0
Axford	16,960 0 0
Hedges	16,900 0 0
Hill & Keddel	16,515 0 0
King & Sons	16,430 0 0
Webb & Sons	16,285 0 0
Watts	16,058 0 0

For building the superstructure of the Wedgwood Memorial Institute, at Burslem, Staffordshire. Mr. R. Edgar, architect. Quantities supplied by Mr. T. Nixon:—

Woolrich & Sidley	£4,143 0 0
Dennett	4,126 0 0
Trow & Sons	3,849 0 0
Matthews	3,671 0 0
Burkett	3,500 0 0
Barlow (accepted)	3,500 0 0

For additions to town-hall, Bewdley. Mr. H. Rowe, architect:—

Poutney (accepted)	£420 0 0

For taking down, rebuilding, and decorating front walls to the City of Lichfield Tavern, 41, Mount Pleasant, Elm-street, Gray's-inn-road, for Mr. B. Taylor. Mr. W. F. Potter, architect:—

Honour	£200 0 0
Perkins	175 0 0
Hatchman & Son	153 14 6
Aylett (accepted)	140 0 0

For public-house, in Great Knollys-street, Reading, for Messrs. Field & Co. Mr. Jos. Morris, architect. Quantities not supplied:—

Kendall	£461 14 0
Ball	460 0 0
Carter	458 0 0
Harris	454 0 0
Simonds (accepted)	437 16 0

For house, at Earley, for Mr. Burton. Mr. Jos. Morris, architect. Quantities supplied:—

Bricklayer, Mason, Slater, and Plasterer's Work.	
Strong & Son	£446 10 0
Higgs	422 4 10
Searle (accepted)	389 11 6
Carpenter, Joiner, and Smith's Work.	
Matthews	359 0 0
Sheppard	299 0 0
Dunn (accepted)	289 15 0

For general sewer works, for St. Pancras Vestry. Mr. W. B. Scott, surveyor:—

Williams, 30 per cent. above schedule prices.
Faulkner, 5 „ „
Mann,* 16½ per cent. under schedule prices.
Crockett, 17 „ „

* Accepted. Last year, the committee of works rejected Mr. Mann's tender when it was the lowest, because he was so dilatory in sending his vouchers, and accepted that of Mr. Crockett, which was the next lowest. This year they accepted Mr. Mann's tender, as above, to make amends for his rejection last year. The tenders are subject to the approval of the vestry.

For sewer, in Mansfield-road, for St. Pancras Vestry. Mr. W. B. Scott, surveyor:—

Faulkner	£1,633 0 0
Bloomfield	1,357 0 0
Crockett	1,340 0 0
Mann	1,025 0 0
Haddock (accepted)	750 0 0